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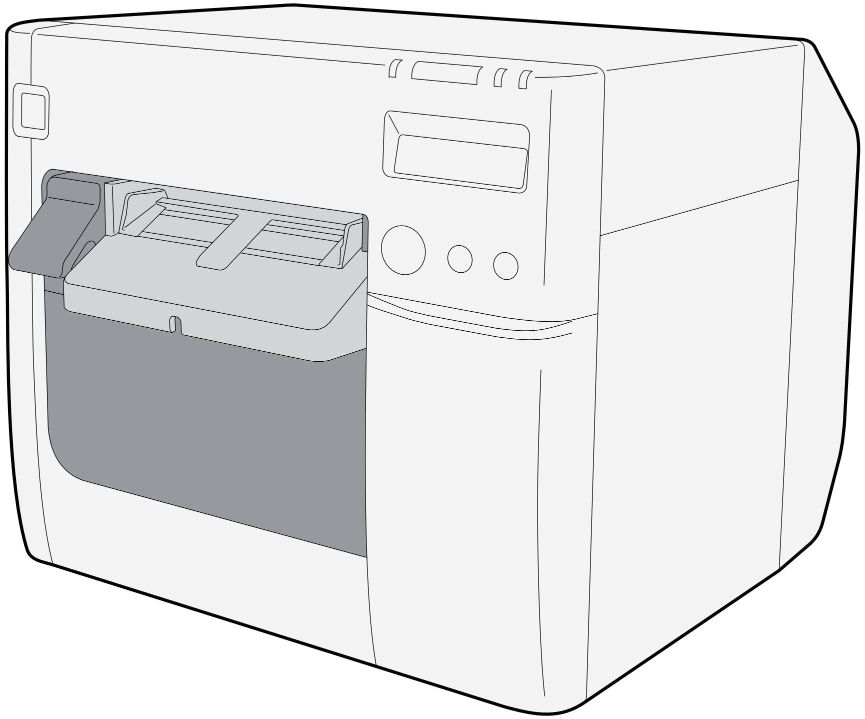
# TM-C3500 Series

## Service manual



Rev.G
M00066406

## PRODUCT OVERVIEW

Describes features and general specifications of the product.

## OPERATING PRINCIPLES

Describes the mechanical operations of the product.

## HANDLING

Gives information on how to install, handle, and operate the product.

## TROUBLESHOOTING

Explains how to troubleshoot problems.

## DISASSEMBLY & ASSEMBLY

Provides step-by-step procedures for disassembling the product.

## ADJUSTMENT

Provides methods for adjustment.

## MAINTENANCE

Describes routine maintenance procedures, such as lubrication, cleaning and etc.

## APPENDIX

Provides the reference information in the exploded diagrams, Parts List and etc. of the product.

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# For Safe Repair and Maintenance Work

## Key to Symbols

The symbols in this manual are identified by their level of importance, as defined below. Read the following carefully before handling the product.

| | |
|---|---|
| **WARNING** | You must follow warnings carefully to avoid serious bodily injury. |
| **CAUTION** | Observe cautions to avoid minor injury to yourself, damage to your equipment, or loss of data. |
| **Check** | Notes have important information and useful tips on the operation of your equipment. |
| **Assembly** | Indicates that a particular task must be carried out according to a certain standard after disassembly and before reassembly, otherwise the quality of the components in question may be adversely affected. |
| **Adjustment** | Indicates an operating or maintenance procedure, practice, or condition that is necessary to keep the product's quality. |
| **Lubrication** | Indicates a lubrication point, practice, or condition that is necessary to keep the product's quality. |

## Safety Precautions on Handling

This section presents important information intended to ensure safe and effective use of this product. Please read this section carefully and store it in an accessible location.

**WARNING**

- ☐ Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Continued use may lead to fire or electric shock. Immediately unplug the equipment.
- ☐ Only disassemble this product as described in this manual. Do not make modifications to the unit. Tampering with this product may result in injury, fire, or electric shock.
- ☐ Never insert or disconnect the power plug with wet hands. Doing so may result in severe shock.
- ☐ Do not allow foreign matter to fall into the equipment. Penetration by foreign objects may lead to fire or shock.
- ☐ If water or other liquid spills into this equipment, unplug the power cord immediately. Continued usage may lead to fire or shock.
- ☐ Do not place multiple loads on the power outlet (wall outlet). Overloading the outlet may lead to fire.
- ☐ Handle the power cord with care. Improper handling may lead to fire or shock.
  - ■ Do not modify or attempt to repair the cord.
  - ■ Do not place any object on top of the cord.
  - ■ Avoid excessive bending, twisting, and pulling.
  - ■ Do not place cord near heating equipment.
  - ■ Check that the plug is clean before plugging it in.
  - ■ Be sure to push the prongs all the way in.

**CAUTION**

☐ Do not connect cables in ways other than those mentioned in this manual. Different connections may cause equipment damage and burning.

☐ Be sure to set this equipment on a firm, stable, horizontal surface. Product may break or cause injury if it falls.

☐ Do not use in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage, fire, or shock.

☐ Do not place heavy objects on top of this product. Never stand or lean on this product.Equipment may fall or collapse, causing breakage and possible injury.

☐ To ensure safety, please unplug this product prior to leaving it unused for an extended period.

☐ Do not touch the print head or paper feed motor. Wait for the head and the motor to cool. The head and the motor can be very hot after printing for a long time. Touching them may cause burns.

## Safety Precautions on Maintenance/Repair/Inspection

**WARNING**

☐ To prevent the possibility of electrical shock, do not perform maintenance, repair, or inspection during a thunderstorm.

☐ If you want to use a compressed air product, such as an air duster, for cleaning during repair and maintenance, you must never use products containing flammable gas.

**CAUTION**

☐ Wear a grounded wrist band when handling the internal circuit board to prevent damage from static electricity.

☐ When removing the internal circuit board, place it on an anti-static rubber sheet or similar surface to prevent damage from static electricity.

☐ Parts on the circuit board may become hot during operation. Therefore, wait approximately 10 minutes after turning the power off before touching them.

☐ Be careful not to subject the circuit board to shock or vibration, because this may damage it.

☐ Do not touch the circuit board or cable terminals with your hands to prevent contamination that may result in a malfunction.

☐ Do not use an alcohol, benzine, thinner, trichloroethylene, or ketone-based solvent to clean the parts. This type of solvent may damage the plastic and rubber parts.

☐ Wipe off any dirt with a dry or slightly moist cloth. Be sure to remove the power cord from the outlet at this time.

### Note on Disposal

**Check**

Follow current laws or regulations when disposing of the product.

# *About this Manual*

## *Aim of the Manual*

This manual was created to provide the information on printer maintenance and repair required by technicians who handle this work.

## *Manual Content*

The manual is made up of the following sections:

| | |
|---|---|
| Chapter 1 | Product Overview<br>Describes features and general specifications of the product. |
| Chapter 2 | Operating Principles<br>Describes the mechanical operations of the product. |
| Chapter 3 | Handling<br>Gives information on how to install, handle, and operate the product. |
| Chapter 4 | Troubleshooting<br>Explains how to troubleshoot problems. |
| Chapter 5 | Disassembly & Assembly<br>Provides step-by-step procedures for disassembling the product. |
| Chapter 6 | Adjustment<br>Provides methods for adjustment. |
| Chapter 7 | Maintenance<br>Describes routine maintenance procedures, such as lubrication, cleaning, etc. |
| Chapter 8 | Appendix<br>Provides the reference information in the exploded diagrams, lubrication diagrams, etc. of the product. |

# Revision Sheet

| Revision | Page | Altered Items and Contents |
|---|---|---|
| Rev. A | All | First release |
| Rev. B | Page 32 | Part Names and Functions<br>☐ **"Figure 1-4. External view (front)" (Page 32)** is modified. |
| | Page 66 | Installing the Roll Paper<br>☐ The illustration of step5 is modified. |
| | Page 69 | Installing Fanfold Paper<br>☐ The illustration of step4 is modified. |
| | Page 88 | Troubleshooting from the messages on the LCD<br>☐ Remedy of "MEDIA SIZE ERROR" is modified. |
| Rev. C | Page 230 | GAP / Roll paper Margin Adjustment<br>☐ **"Figure 6-13. GAP & Roll paper Margin adjustment pattern" (Page 230)** is corrected. |
| Rev. D | Page 52 | Motor and sensor specifications<br>☐ Specifications of the detected state are corrected. |
| | Page 56 | Sensor specifications<br>☐ Specifications of the detected state are corrected. |
| | Page 88 | Troubleshooting from the messages on the LCD<br>☐ Paper jam error 81 is added. |
| | Page 94 | Fatal errors<br>☐ Paper out step over error (error code: 81H) is added. |
| | Page 268 | Tools for Repair and Adjustment<br>☐ Thickness gauge is corrected. |

| Revision | Page | Altered Items and Contents |
|---|---|---|
| Rev. E | Page 19<br>Page 19<br>Page 24<br>Page 35<br>Page 39 | Operating Environment<br>☐ OS is added.<br>Printing specifications<br>☐ Printing quality "Quality (Mode2)" is added.<br>Bar codes/2-dimensional symbols<br>☐ Printing quality "Quality (Mode2)" is added.<br>Indicators<br>☐ Printer status "Disable auto nozzle check system" is added.<br>DIP Switch Settings<br>☐ The function of Switch No. 3 is changed. |
|  | Page 85 | Printing the Self-test<br>☐ Number of cuts is added. |

| Revision | Page | Altered Items and Contents |
|---|---|---|
| Rev. E | Page 120 | Releasing the Carriage Lock<br>☐ Misdescription is corrected. |
| | Page 122 | Right Case<br>☐ Screw type is modified. |
| | Page 128 | Roll Paper Guide Film<br>☐ Screw type is modified. |
| | Page 131 | Upper Case Assembly<br>☐ Screw type is modified. |
| | Page 132 | Circuit Board Cover<br>☐ Quantity of screw is modified. |
| | Page 138 | Main Circuit Board Unit<br>☐ Screw type is modified.<br>☐ Assembly point and check point are added. |
| | Page 140 | Circuit Board Frame<br>☐ Assembly point is added. |
| | Page 143 | Rear F/F Paper Guide Sub Unit<br>☐ Quantity of screw is modified. |
| | Page 148 | FFC Guide<br>☐ Screw type is modified. |
| | Page 168 | CR Motor Assembly<br>☐ Reference No. of the panel circuit board plate is changed. 0039 -> 570 |
| | Page 170 | Lower Case Assembly<br>☐ Assembly point is added. |

| Revision | Page | Altered Items and Contents |
|---|---|---|
| Rev. E | Chapter 6 All | ☐ Adjustment name is modified. |
|  | Page 207 | Required Adjustments by Part or Unit<br>☐ The order of the adjustment is modified. |
|  | Page 217 | Description of Adjustments<br>☐ Description of Adjustments is modified. |
|  | Page 221 | Installation<br>☐ Description of Installation is modified. |
|  | Page 221 | Basic operating procedure<br>☐ Description is added. |
|  | Page 222 | Sequential mode<br>☐ Description is added. |
|  | Page 223 | Particular mode<br>☐ Description is added. |
|  | Page 233 | Bi-d (VSD4) Adjustment<br>☐ Description is modified. |
|  | Page 234 | Fan Rotation Adjustment<br>☐ Description is modified. |
|  | Page 236 | AID Output Level Check<br>☐ Description is added. |
|  | Page 237 | BACK FEED PICTH Misalignment Adjustment<br>☐ Description is modified. |
|  | Page 241 | Head Slant Check<br>☐ Inspection paper is modified. |
|  | Page 253 | Firmware Update<br>☐ Check point is added. |
|  | Page 260 | Appendix A Parts List<br>☐ Parts list is modified. |
|  | Page 268 | Appendix B Tools<br>☐ Tools list is modified. |
|  | Page 269 | Appendix C Exploded Diagrams and Lubrication Diagrams<br>☐ Exploded Diagrams are modified. |

| Revision | Page | Altered Items and Contents |
|---|---|---|
| Rev. F | Page 93 | Maintenance required<br>☐ Description is modified. |
| | Page 94 | Fatal errors<br>☐ Description is modified/added. (”Print unfinished error when the carriage drive is stopped" (Error code: 44H) added) |
| | Page 121 | F/F Cover<br>☐ Reference No. of the FF guide is changed. 0001 -> 148 |
| | Page 125 | Roll Paper Cover Sub Assembly<br>☐ Reference No. of the roll paper cover guide is changed. 0003 -> 147 |
| | Page 170 | Lower Case Assembly<br>☐ Reference No. of the roll paper cover guide is changed. 0003 -> 147 |
| | Page 172 | Maintenance Box Holder Absorber / CSIC Connector<br>☐ Procedure is changed, assembly point is added. |
| | Page 179 | Supply Duct Unit<br>☐ Procedure is changed, assembly point and check point are added. |
| | Page 185 | Cartridge Holder Unit<br>☐ Assembly point is added. |
| | Page 189 | IS Pump Unit<br>☐ Procedure is changed, assembly point is added. |
| | Page 207 | Required Adjustments by Part or Unit<br>☐ The order of the adjustment is modified. Description is added. |
| | Page 217 | Description of Adjustments<br>☐ Description is modified. |
| | Page 229 | Adjustment<br>☐ Title is changed. Adjust -> Adjustment |
| | Page 241 | Head Slant Check<br>☐ Description is modified. |
| | Page 243 | Fanfold Paper Print Test<br>☐ Description is modified. |
| | Page 244 | Roll Paper Print Test<br>☐ Description is modified. |
| | Page 246 | A/C duration test<br>☐ Description is added. |
| | Page 249 | Get Counter Information<br>☐ Description is added. |

| Revision | Page | Altered Items and Contents |
|---|---|---|
| Rev. F | Page 251<br>Page 251<br>Page 251<br>Page 251<br>Page 251<br>Page 251<br>Page 252<br>Page 252<br>Page 252<br>Page 252<br>Page 252<br>Page 252 | Reset Cutter movement counter<br>☐ Description of Adjustments is modified.<br>Reset Waste ink absorber counter<br>☐ Description of Adjustments is modified.<br>Reset Tube Maintenance Counter<br>☐ Description of Adjustments is modified.<br>Reset AID Irreparable Nozzle Number<br>☐ Description of Adjustments is modified.<br>Reset AID Noise Through Print Pass Number<br>☐ Description of Adjustments is modified.<br>Reset AID Retry Wiping Counter<br>☐ Description of Adjustments is modified.<br>Reset AID Irreparable Nozzle Data<br>☐ Description of Adjustments is modified.<br>Reset Pressure Pump Counter CW<br>☐ Description of Adjustments is modified.<br>Reset Pressure Pump Counter CCW<br>☐ Description of Adjustments is modified.<br>Reset Pressure Pump Counter Counter<br>☐ Description of Adjustments is modified.<br>Reset Waste Ink Holder Counter<br>☐ Description of Adjustments is modified.<br>Get Fatal Error Information<br>☐ Description of Adjustments is modified. |
| | Page 260<br>Page 269 | Appendix A Parts List<br>☐ Parts list is modified.<br>Appendix C Exploded Diagrams and Lubrication Diagrams<br>☐ Exploded Diagrams are modified. |
| Rev. G | Page 162 | A/C Case Assembly<br>☐ Assembly point is added. |
| | Page 236 | AID Output Level Check<br>☐ Unnecessary check point is deleted. |

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CHAPTER

# 1

# PRODUCT OVERVIEW

# Features

TM-C3500 / C3510 / C3520 is an ink jet label printer that offers the high speed, easy operability, and high reliability required for on-demand label printing.

The printer has the following features.

☐ High-speed printing
- 103 mm/s {4.05"/s} (printing width 56 mm {2.21"}, 360 dpi × 360 dpi, bidirectional printing)
- 96 mm/s {3.78"/s} (printing width 72 mm {2.84"}, 360 dpi × 360 dpi, bidirectional printing)

☐ Supports printing on a variety of types of paper
- Continuous paper, full-page label, die-cut label
- Detects positions of black marks and gaps between labels
- Plain, matte, synthetic label, glossy label

☐ Easy operability required for commercial applications
- Front operation structure
  (Replacement of roll paper, ink cartridges and maintenance box)
- Drop-in roll paper method
- Capable of using fanfold paper

☐ High reliability required for commercial applications
- Uses pigment ink for excellent light resistance and water resistance
- Has an auto nozzle check system

☐ Full-color printing
- 4-color printing (black, cyan, magenta and yellow)
- Print resolution 360 dpi × 360 dpi, 720 dpi × 360 dpi
  [dpi: dots per 25.4 mm (dots per inch)]

☐ Other features
- Includes a USB interface and Ethernet interface
- Includes an autocutter
- Includes a beeper
- Printing with a Windows printer driver

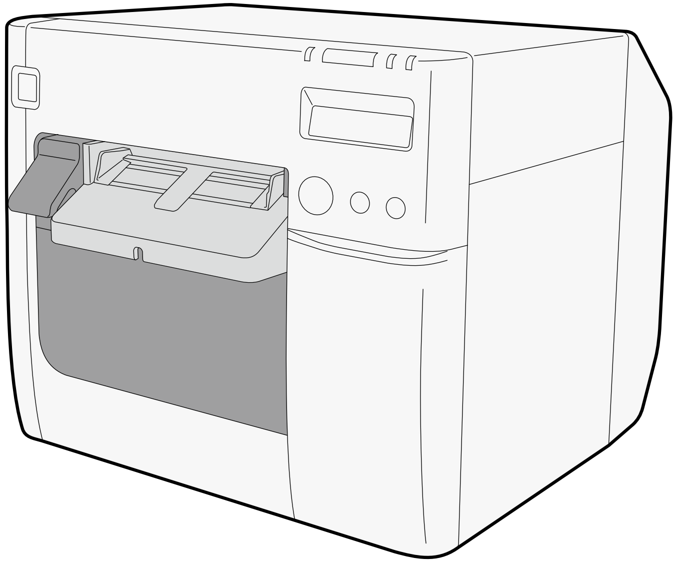


**Figure 1-1. External view**

# *Product Specifications*

## *Operating Environment*

| Item | Specification |
|---|---|
| **OS** | ☐ Microsoft Windows 10 (32 bit/ 64 bit)<br>☐ Microsoft Windows 8.1 (32 bit/ 64 bit)<br>☐ Microsoft Windows 8 (32 bit/ 64 bit)<br>☐ Microsoft Windows 7 SP1 (32 bit/ 64 bit)<br>☐ Microsoft Windows Vista SP2 (32 bit/ 64 bit)<br>☐ Microsoft Windows XP SP3 (32 bit)<br>☐ Microsoft Windows XP SP2 (64 bit)<br>☐ Microsoft Windows Server 2012 R2<br>☐ Microsoft Windows Server 2012<br>☐ Microsoft Windows Server 2008 R2<br>☐ Microsoft Windows Server 2008 SP2 (32 bit/ 64 bit)<br>☐ Microsoft Windows Server 2003 R2 SP2 (32 bit/ 64 bit) |
| **Computer** | PC/AT-compatible running one of the above operating systems. |
| **CPU** | Identical to that required for OS. |
| **RAM** | Identical to that required for OS. |
| **HDD** | Identical to that required for OS. |

Note 1: The minimum requirements for the system given above may not meet the minimum requirements for the OS you use. In such a case, use the minimum requirements for your OS.

2: The supported number of printers connected via the network is up to 64. If many printers (near the maximum number) are used, the printers may not deliver sufficient performance in the system with the minimum requirements specified above.

## *General Specifications*

### *Printing specifications*

| Item | | Specification |
|---|---|---|
| **Printing method** | | Serial ink jet, dot matrix<br>Four-color printing |
| **Printing direction** | | Bi-directional, Unidirectional |
| **Paper feed** | | Forward and reverse friction feed |
| **Paper width** | **Roll paper** | Continuous paper: 30 {1.18"} to 108 mm {4.25"}<br>Full-page label (backing paper = liner): 30 {1.18"} to 112 mm {4.41"}<br>Die-cut label (backing paper = liner): 30 {1.18"} to 112 mm {4.41"} |
| | **Fanfold paper** | Continuous paper: 50 {1.97"} to 108 mm {4.25"}<br>Die-cut label (backing paper = liner): 50 {1.97"} to 112 mm {4.41"} |
| **Printing width** | | Maximum 104 mm {4.09"}/maximum 1,474 dot positions (360 dpi) |

See the table on the next page for the printing speeds corresponding to the printing resolutions*1*2.

☐ Plain/Plain label

- ■ Printing quality: Speed (fixed)

| Banding reduction (Driver) | Input resolution (horizontal × vertical) (dpi) | Graphic resolution (horizontal × vertical) (dpi) | Printing direction | Printing width 56 mm {2.20"} | Printing width 72 mm {2.83"} | Printing width 104 mm {4.09"} |
|---|---|---|---|---|---|---|
| Disabled (fixed) | 360 × 360 | 360 × 360 | Bi-d | 103 mm/s {4.05"/s} | 96 mm/s {3.78"/s} | 85 mm/s {3.35"/s} |

☐ Synthetic label, Matte, Matte label, Glossy label

■ Printing quality: Speed

| Banding reduction (Driver) | Input resolution (horizontal × vertical) (dpi) | Graphic resolution (horizontal × vertical) (dpi) | Printing direction | Printing width 56 mm {2.20"} | Printing width 72 mm {2.83"} | Printing width 104 mm {4.09"} |
|---|---|---|---|---|---|---|
| Disabled | 360 × 360 | 360 × 360 | Bi-d | 103 mm/s {4.05"/s} | 96 mm/s {3.78"/s} | 85 mm/s {3.35"/s} |
| Enabled | 360 × 360 | 360 × 360 | Bi-d | 95 mm/s {3.74"/s} | 88 mm/s {3.46"/s} | 78 mm/s {3.07"/s} |

■ Printing quality: Quality (Mode 1)

| Banding reduction (Driver) | Input resolution (horizontal × vertical) (dpi) | Graphic resolution (horizontal × vertical) (dpi) | Printing direction | Printing width 56 mm {2.20"} | Printing width 72 mm {2.83"} | Printing width 104 mm {4.09"} |
|---|---|---|---|---|---|---|
| --- | 360 × 360 | 720 × 360 | Bi-d | 52 mm/s {2.05"/s} | 48 mm/s {1.89"/s} | 42 mm/s {1.65"/s} |

■ Printing quality: Quality (Mode 2)*3

| Banding reduction (Driver) | Input resolution (horizontal × vertical) (dpi) | Graphic resolution (horizontal × vertical) (dpi) | Printing direction | Printing width 56 mm {2.20"} | Printing width 72 mm {2.83"} | Printing width 104 mm {4.09"} |
|---|---|---|---|---|---|---|
| --- | 360 × 360 | 720 × 360 | Bi-d | 30 mm/s {1.18"/s} | 27mm/s {1.06"/s} | 24 mm/s {0.94"/s} |

☐ Wristband

■ Printing quality: Speed

| Banding reduction (Driver) | Input resolution (horizontal × vertical) (dpi) | Graphic resolution (horizontal × vertical) (dpi) | Printing direction | Printing width 56 mm {2.20"} | Printing width 72 mm {2.83"} | Printing width 104 mm {4.09"} |
|---|---|---|---|---|---|---|
| Disabled | 360 × 360 | 360 × 360 | Bi-d | 103 mm/s {4.05"/s} | 96 mm/s {3.78"/s} | 85 mm/s {3.35"/s} |
| Enabled | 360 × 360 | 360 × 360 | Bi-d | 95 mm/s {3.74"/s} | 88 mm/s {3.46"/s} | 78 mm/s {3.07"/s} |

■ Printing quality: Quality (Mode 1)

| Banding reduction (Driver) | Input resolution (horizontal × vertical) (dpi) | Graphic resolution (horizontal × vertical) (dpi) | Printing direction | Printing width 56 mm {2.20"} | Printing width 72 mm {2.83"} | Printing width 104 mm {4.09"} |
|---|---|---|---|---|---|---|
| Enabled (fixed) | 360 × 360 | 720 × 360 | Bi-d | 52 mm/s {2.05"/s} | 48 mm/s {1.89"/s} | 42 mm/s {1.65"/s} |

[dpi: dots per 25.4 mm (dots per inch), Bi-d: bidirectional printing]

*1: The print speeds above are for continuous printing, except during print head cleaning, autocutting, starting/ending a job, or periodical nozzle checks (page 40 " Auto Nozzle Check System").

*2: Print speed may slow down, depending on the data transmission speed.

*3: "Quality (Mode2)" applies to the following firmware versions and driver versions:
Firmware: WAD31000 or later, WAM31000 or later
Drivers: Ver.2.0.0.0 or later

Note 1: When it prints by without Quality (Mode2), in some cases, white stripes (lines looking white) or black stripes (overlapping images) may appear with 1-inch spans in image printing results. These problems can be alleviated to some degree by conducting [Printer Utilities] - [Printer Preferences] - [Printer Setting Utility] - [Printer Adjustment] - [Gap Adjustment] - [Paper Feed Adjustment] but cannot be resolved completely. In order to have no white stripes or no black stripes, it recommends to prints by Quality (Mode2).

2: In some cases, changes in color tone may appear with 1-inch gaps in image printing results.

3: If "Banding Reduction" is enabled, printing control is performed so that the aforementioned white stripes (lines looking white) or black strikes (overlapping images) for 1-inch spans do not stand out. Therefore, the printing speed is somewhat slower than if "Banding Reduction" is disabled.

## *Roll paper supply unit specifications*

| **Item** | **Specification** | |
|---|---|---|
| **Supply method** | Drop-in roll paper | |
| **Paper width selection** | Supply unit | Non-step adjustable paper spacer (with a release lever) |
| | Ejecting unit | Non-step adjustable paper spacer |

Note 1: Print position in the horizontal direction may not be at the correct print starting position immediately after the paper is loaded.

2: The print position in the horizontal direction may not be at the correct print starting position when the roll paper is close to its end.

3: Do not use roll paper with the paper feed guide attached in the paper path under the roll paper cover.

4: Do not use roll paper with the edge glued to its paper core. The length of the fold of the edge must be 10 mm {0.39"} or less; otherwise do not fold it.

5: If the turnback at beginning of roll-up is too long, the paper may get stained when it is used up and paper jams may also occur. Therefore, the paper at beginning of roll-up should not be turned back; if it is turned back, no more than 10 mm should be turned back.

6: The turnback of the paper must not stick out of either side of the roll paper, or the paper edge will be bent, causing possible stains on the paper and paper jams.

7: If you change the paper width from narrow to wide, the paper may be stained with the paper dust stuck on the paper edge position in the printer paper path.

## *Fanfold paper supply unit specifications*

| **Item** | **Specification** | |
|---|---|---|
| **Supply method** | Automatic loading into the back of the printer | |
| **Paper width selection** | Supply unit | Non-step adjustable paper spacer |
| | Ejecting unit | Non-step adjustable paper spacer |

Note 1: Print position in the horizontal direction may go off the correct print starting position immediately after loading the paper.

2: When using fanfold paper, install the paper feed guide dedicated for fanfold paper in the paper path underneath the roll paper cover.
(See page 69, " Installing Fanfold Paper.")
Do not use roll paper with the paper feed guide attached in the paper path under the roll paper cover.

3: Using paper without black marks may cause problems such as uneven printing due to overlapping of the perforated line and the print area, or shortening of the cutter life due to matching of the perforated line and the autocutter position. Be sure to use paper that has black marks on the back side for paper positioning.

## *Autocutter specifications*

| **Item** | **Specification** |
|---|---|
| **Cutting method** | By separated-blade scissors |
| **Cutting type** | Full cut (cuts paper completely) |
| **Minimum cut length** | 15 mm {0.59"} |

Note 1: If the paper width is changed from wide to narrow in the middle of operation, print reliability may deteriorate due to the difference in wear rates of cutter blade.

2: When using full-page label, remove the label paper every time it is ejected after printing, or a part of the ejected paper may be cut or paper jams may occur.

3: Cutting full-page label may make the cutter blade dull due to the glue stuck on the blade. Clean the cutter blade periodically. (See page 107, " Paper is Not Cut.")

## *Ink cartridge specifications*

| Item | | Specification | | |
|---|---|---|---|---|
| | | **TM-C3500** | **TM-C3510** | **TM-C3520** |
| **Model number** | | SJIC22P(K)/<br>SJIC22P(C)/<br>SJIC22P(M)/<br>SJIC22P(Y) | SJIC23P(K)/<br>SJIC23P(C)/<br>SJIC23P(M)/<br>SJIC23P(Y) | SJIC24P(K)/<br>SJIC24P(C)/<br>SJIC24P(M)/<br>SJIC24P(Y) |
| **Type** | | 4 color-ink separated exclusive ink cartridge | | |
| **Ink color** | | Black, cyan, magenta, yellow | | |
| **Ink type** | | Pigment ink | | |
| **Ink cartridge expiration** | | ☐ 6 months after installation in a printer<br>☐ 2 years after the production date | | |
| **Storage temperature** | Transported in the individual box | -20 {-4°F} to 60°C {140°F} (within 5 days at 60°C) | | |
| | Stored in the individual box | -20 {-4°F} to 40°C {104°F} (within 1 month at 40°C) | | |
| | Installed on the printer | -20 {-4°F} to 40°C {104°F} (within 1 month at 40°C) | | |

Note 1: Since ink cartridges are designed to stop the operation before ink runs out completely to maintain the quality of the print head, some ink remains in the used ink cartridge.

2: Even if you designated a certain color and printed, all 4 colors are used to maintain favorable printing operations and print heads.

3: When using the product for the first time, ink charge also uses up some ink to make the product ready for printing.

## *Maintenance box specifications*

| Item | Specification |
|---|---|
| **Model number** | SJMB3500 |

## *Paper specifications*

| Media type | Media form | Form | Paper width* |
|---|---|---|---|
| Plain | Continuous paper | Roll paper | 30 to 108 mm {1.18 to 4.25"} |
| | Black mark continuous paper | Roll paper | 30 to 108 mm {1.18 to 4.25"} |
| | | Fanfold paper | 50 to 108 mm {1.97 to 4.25"} |
| Plain label | Full-page label<br>Transparent full-page label | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
| | Die-cut label (Gap)<br>Transparent die-cut label | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
| | Die-cut label (BM) | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
| | | Fanfold paper | 46 to 108 mm {1.81 to 4.25"} |
| Matte | Continuous paper | Roll paper | 30 to 108 mm {1.18 to 4.25"} |
| | Black mark continuous paper | Roll paper | 30 to 108 mm {1.18 to 4.25"} |
| | | Fanfold paper | 50 to 108 mm {1.18 to 4.25"} |
| Matte label | Full-page label<br>Transparent full-page label | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
| | Die-cut label (Gap)<br>Transparent die-cut label | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
| | Die-cut label (BM) | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
| | | Fanfold paper | 46 to 108 mm {1.81 to 4.25"} |
| Synthetic label | Full-page label<br>Transparent full-page label | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
| | Die-cut label (Gap)<br>Transparent die-cut label | Roll paper | 25.4 to 108 mm {1 to 4.25"} |

| Media type | Media form | Form | Paper width* |
|---|---|---|---|
| Glossy label | Full-page label<br>Transparent full-page label | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
|  | Die-cut label (Gap)<br>Transparent die-cut label | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
|  | Die-cut label (BM) | Roll paper | 25.4 to 108 mm {1 to 4.25"} |
|  |  | Fanfold paper | 46 to 108 mm {1.81 to 4.25"} |
| Wristband | Black mark continuous paper | Roll paper | 30 mm {1.18"} |

* : The widths for the receipt show the paper width, and those for the label paper show the label width.

* : When using paper other than the specified paper, paper-feed accuracy, bar-code detection accuracy, and print quality may be degraded, or frequent paper jam may occur.

* : Do not use the label paper with synthetic labels on the paper backing (liner). Depending on the temperature and humidity, the synthetic labels and paper backing have different ratios of expansion and contraction, and this causes the paper to curl. If the paper curls, the paper may be rubbed by the print head and become contaminated, or the paper may jam.

* : Do not use the paper which is extended by connecting with tape and others. The paper may be detected incorrectly by the connected line, and rubbed by the print head and become contaminated, or the paper may jam.

☐ Media type

- ■ Plain
  Media without an ink absorbing layer or an adhesive face.
  Applicable graphic resolution (horizontal × vertical): 360 × 360 dpi
- ■ Plain label
  Media without an ink absorbing layer but with an adhesive face.
  Applicable graphic resolution (horizontal × vertical): 360 × 360 dpi
- ■ Matte
  Media with an ink absorbing layer on the paper but without an adhesive face.
  Applicable graphic resolution (horizontal × vertical): 360 × 360 dpi, 720 × 360 dpi
- ■ Matte label
  Media with an ink absorbing layer on the paper and an adhesive face.
  Applicable graphic resolution (horizontal × vertical): 360 × 360 dpi, 720 × 360 dpi
- ■ Synthetic label
  Media with an ink absorbing layer on the synthetic paper and an adhesive face.
  Applicable graphic resolution (horizontal × vertical): 360 × 360 dpi, 720 × 360 dpi
- ■ Glossy label
  Media with an ink absorbing layer on the paper and an adhesive face.
  Applicable graphic resolution (horizontal × vertical): 360 × 360 dpi, 720 × 360 dpi
- ■ Wristband
  Media for wristbands with an ink absorbing layer on the synthetic paper but without an adhesive face.
  Applicable graphic resolution (horizontal × vertical): 360 × 360 dpi, 720 × 360 dpi

☐ Media form

- ■ Continuous paper
  Continuous paper without black marks for position detection or an adhesive face.
- ■ Black mark continuous paper
  Continuous paper with black marks for position detection but without an adhesive face.
- ■ Full-page label/ Transparent full-page label
  Paper that has no gaps or black marks for position detection but has an adhesive face and is not precut in a certain size in the way a die-cut label is.
- ■ Die-cut label (Gap)/ Transparent die-cut label
  Paper on which labels are adhesion-processed and precut in a certain size and has gaps in between.
- ■ Die-cut label (BM)
  Die-cut label with black marks. Paper on which labels are adhesion-processed and have precut in a certain size and have black marks for position detection.

## *Bar codes/2-dimensional symbols*

TM-C3500/C3510/C3520 is not equipped with a bar-code-encoding function. However, it provides bar codes and 2-dimensional symbol fonts by using Windows printer driver.

☐ Barcodes/2-dimensional symbol fonts

The Windows driver provides with the following barcodes/2-dimensional symbol fonts.

| **Bar Codes** | **2-dimensional symbols** |
|---|---|
| ☐ UPC-A<br>☐ UPC-E<br>☐ JAN13(EAN)<br>☐ JAN8(EAN)<br>☐ Code39<br>☐ ITF<br>☐ Codabar<br>☐ Code93<br>☐ Code128<br>☐ GS1-128<br>☐ GS1 DataBar Omnidirectional<br>☐ GS1 DataBar Truncated<br>☐ GS1 DataBar Limited<br>☐ GS1 DataBar Expanded | ☐ PDF417<br>☐ QR Code<br>☐ Maxi Code<br>☐ GS1 DataBar Stacked<br>☐ GS1 DataBar Stacked Omnidirectional<br>☐ GS1 DataBar Expanded Stacked<br>☐ DataMatrix<br>☐ Aztec Code |

☐ Recommended module values for barcodes

The following are the barcode types and recommended barcode values that meet an ANSI grade according to Epson evaluation standards, when printing on Epson-specified paper. The recommended module values for ladder barcodes and for fence barcodes are different because they are affected by accuracy in paper feeding.

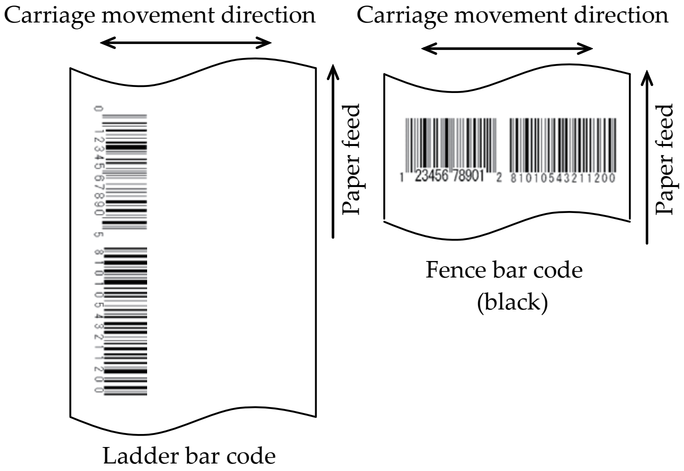


**Figure 1-2. Bar code type and printing direction**

| Media type | Printing quality | Graphic resolutions (Horizontal x vertical) (dpi) | Print direction | Bar width adjustment*1 | Upper line: minimum module<br>Lower line: comparison of minimum element | | |
|---|---|---|---|---|---|---|---|
| | | | | | **ANSI grade: D or higher** | **ANSI grade: C or higher** | **ANSI grade: B or higher** |
| ☐ Plain<br>☐ Plain label | Speed | 360 × 360 | Fence | Required | 4 dots<br>2.5 | --- | --- |
| | | | Ladder | | 6 dots<br>2.5 | --- | --- |
| ☐ Synthetic label<br>☐ Matte<br>☐ Matte label<br>☐ Glossy label | Speed | 360 × 360 | Fence | | 3 dots<br>2.7 | 4 dots<br>2.5 | |
| | | | Ladder | | 6 dots<br>2.5 | --- | --- |
| | Quality (Mode1) | 720 × 360 | Fence | | 3 dots<br>2.7 | 4 dots<br>2.5 | |
| | | | Ladder | | 6 dots<br>2.5 | --- | --- |
| | Quality (Mode2) *3 | 720 × 360 | Fence | | 3 dots<br>2.7 | 4 dots<br>2.5 | |
| | | | Ladder | | 6 dots<br>2.5 | --- | --- |
| ☐ Wristband | Speed | 360 × 360 | Fence | | 3 dots<br>2.7 | 4 dots<br>2.5 | |
| | | | Ladder | | 6 dots<br>2.5 *2 | ---*2 | --- |
| | Quality (Mode1) | 720 × 360 | Fence | | 3 dots<br>2.7 | 4 dots<br>2.5 | |
| | | | Ladder | | 6 dots<br>2.5 *2 | ---*2 | --- |

Note 1: "---" means "Not guaranteed."

2: In some cases, dot missing and irregularity in ink shots may occur when printing ladder bar codes, lowering the recommended module value to ANSI grade F and making bar codes unrecognizable. Therefore, fence bar codes are recommended to use. To use ladder bar codes, make consideration such as printing HRI characters.

*1: Ink may penetrate the paper due to its characteristics, and bars of printed bar codes tend to become thicker. This tendency is more prominent with some papers. To maintain the bar code recognition rate, use methods such as reducing the data in a bar by 1 pixel and increasing the blank space by 1 pixel (Bar width adjustment). However, do not apply this method to 2-dimensional symbols.

*2: With specific paper type and bar codes, the recommended module values are as follows:
Wrist bands, Code128, 5-dot module: ANSI grade D
Wrist bands, Codabar, 4-dot module: Comparison of minimum element 2.5,
ANSI grade C

*3: "Quality (Mode2)" applies to the following firmware versions and driver versions:
Firmware: WAD31000 or later, WAM31000 or later
Drivers: Ver.2.0.0.0 or later

☐ Recommended module value for stack type 2-dimensional symbols

The following are the 2-dimensional symbol type and recommended module values that meet an ANSI grade according to Epson evaluation standards, when printing on Epson-specified paper. The recommended module values are different depending on whether or not 2-dimensional symbol straddles paper feeding because they are affected by paper feed accuracy.

☐ Stack Type 2-dimensional Symbol and Recommended Module Values

| **Stack type 2-dimensional symbols** |
|---|
| ☐ PDF417<br>☐ GS1 DataBar Stacked<br>☐ GS1 DataBar Stacked Omnidirectional<br>☐ GS1 DataBar Expanded Stacked |

| **Media type** | **Printing quality** | **Graphic resolutions (Horizontal x vertical) (dpi)** | **Whether straddling paper feeding** | **Height of module*1** | **Minimum module** | | |
|---|---|---|---|---|---|---|---|
| | | | | | **ANSI grade: D or higher** | **ANSI grade: C or higher** | **ANSI grade: B or higher** |
| ☐ Plain<br>☐ Plain label | Speed | 360 × 360 | No | 3 modules | 6 dots | --- | --- |
| | | | Yes | | 6 dots | --- | --- |
| ☐ Synthetic label<br>☐ Matte<br>☐ Matte label<br>☐ Glossy label | Speed | 360 × 360 | No | | 4 dots | --- | --- |
| | | | Yes | | 4 dots | --- | --- |
| | Quality (Mode1) | 720 × 360 | No | | 4 dots | --- | --- |
| | | | Yes | | 4 dots | --- | --- |
| | Quality (Mode2) *2 | 720 × 360 | --- | | 4 dots | --- | --- |
| ☐ Wristband | Speed | 360 × 360 | No | | 4 dots | --- | --- |
| | | | Yes | | 4 dots | --- | --- |
| | Quality (Mode1) | 720 × 360 | No | | 4 dots | --- | --- |
| | | | Yes | | 4 dots | --- | --- |

Note 1: “---” means “Not guaranteed.”

2: Do not adjust bar width with 2-dimensional symbols.

*1: The recommended module value when using PDF417.

*2: “Quality (Mode2)” applies to the following firmware versions and driver versions:
Firmware: WAD31000 or later, WAM31000 or later
Drivers: Ver.2.0.0.0 or later

☐ Recommended module value for Matrix type 2-dimensional symbols

The following are the 2-dimensional symbol type and recommended module values that meet an ANSI grade according to Epson evaluation standards, when printing on Epson-specified paper. The recommended module values are different, depending on whether or not 2-dimensional symbol straddles paper feeding because they are affected by paper feed accuracy.

☐ Matrix Type 2-dimensional Symbol and Recommended Module Values

| **Matrix type 2-dimensional symbols** |
|---|
| ☐ QR Code<br>☐ DataMatrix |

| **Media type** | **Printing quality** | **Image resolutions (Horizontal x vertical) (dpi)** | **Whether straddling paper feeding** | **Minimum module** | | |
|---|---|---|---|---|---|---|
| | | | | **ANSI grade: D or higher** | **ANSI grade: C or higher** | **ANSI grade: B or higher** |
| ☐ Plain<br>☐ Plain label | Speed | 360 × 360 | No | 6 dots | --- | --- |
| | | | Yes | 8 dots | --- | --- |
| ☐ Synthetic label<br>☐ Matte<br>☐ Matte label<br>☐ Glossy label | Speed | 360 × 360 | No | 5 dots | 6 dots*1 | |
| | | | Yes | 6 dots | 7 dots | --- |
| | Quality (Mode1) | 720 × 360 | No | 5 dots | 6 dots*1 | |
| | | | Yes | 6 dots | 7 dots | --- |
| | Quality (Mode2) *2 | 720 × 360 | --- | 6 dots | 7 dots | --- |
| ☐ Wristband | Speed | 360 × 360 | No | 5 dots | 6 dots*1 | |
| | | | Yes | 6 dots | 7 dots | --- |
| | Quality (Mode1) | 720 × 360 | No | 5 dots | 6 dots*1 | |
| | | | Yes | 6 dots | 7 dots | --- |

Note 1: "---" means "Not guaranteed."

2: Do not adjust bar width with 2-dimensional symbols.

*1: QR Code only.

*2: "Quality (Mode2)" applies to the following firmware versions and driver versions:
Firmware: WAD31000 or later, WAM31000 or later
Drivers: Ver.2.0.0.0 or later

☐ Barcode/2-dimensional symbol data resolution

Create Barcode/2-dimensional symbol data with the input resolutions shown in the table below according to the graphic resolutions, or the barcode reader may return errors.

| Image resolutions (Horizontal × vertical) | Input image resolutions (Horizontal × vertical) |
|---|---|
| 360 × 360 dpi | 360 × 360 dpi |
| 720 × 360 dpi | 360 × 360 dpi |

Note 1: The bar code recognition rate may vary depending on the paper and the performance of the bar code reader.

2: Print bar codes/2-dimensional symbols on plain background (no printing).

3: It is recommended to use bar codes with digit checking when quite high reliability and safety are required.

## Electrical specifications

| Item | | Specification |
|---|---|---|
| **Power source** | | Dedicated AC adapter |
| **AC adapter** | **Input voltage** | 100 to 240 V (rated) |
| | **Frequency** | 50 to 60 Hz (rated) |
| **Power consumption** | **Operating** | Average: Approx. 30 W |
| | **Peak** | Approx. 50 W |
| | **Idling** | Average: Approx. 2.5 W |
| | **When the power is OFF** | Average Approx. 0.3 W |
| **Applicable standards** | **Europe** | CE marking EMC Directive: 2004/108/EC<br>EN55022 Class A<br>EN55024<br>IEC61000-4-2 IEC61000-4-5<br>IEC61000-4-3 IEC61000-4-6<br>IEC61000-4-4 IEC61000-4-11<br>Safety standard TÜV (EN60950-1) |
| | **North America** | EMI FCC / ICES-003 Class B<br>Safety standard UL60950-1/CSA C22.2 No.60950-1 |
| | **Oceania** | EMI C-Tick Class B |
| | **China** | EMI/Safety standard CCC |
| | **Taiwan** | EMI/Safety standard BSMI |
| | **Korea** | EMC MIC |
| | **Russia** | Safety standard GOST |
| | **Ukraine** | EMC |

## *Reliability*

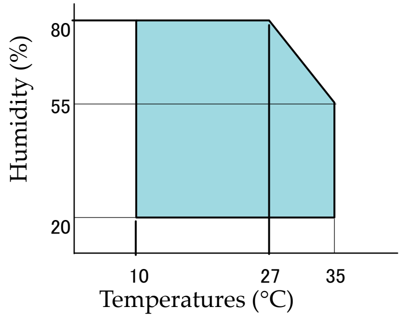
| Item | | Specification |
|---|---|---|
| **Product lifetime** | **Carriage mechanism** | 6 million passes (3 million carriage returns) |
| | **Paper feed mechanism** | 1,500,000 pages (excluding continuous label) or the number of pages that reaches the following paper length fed.<br>☐ Plain: 150 km {93.21 mi}<br>☐ Matte: 75 km {46.60 mi}<br>☐ Wristband (WB-S/M/L series): 30 km {18.64 mi}<br>☐ Die-cut label (Plain): 150 km {93.21 mi}<br>☐ Die-cut label (Matte): 150 km {93.21 mi}<br>☐ Die-cut label (Synthetic): 100 km {62.14 mi}<br>☐ Die-cut label (Glossy): 100 km {62.14 mi}<br>☐ Full-page label (Plain): 100 km {62.14 mi}<br>☐ Full-page label (Matte): 50 km {31.10 mi}<br>☐ Full-page label (Synthetic): 10 km {6.21 mi}<br>☐ Full-page label (Glossy): 30 km {18.64 mi} |
| **Product lifetime** | **Print head** | 6,000 million shots/nozzle |
| | **Autocutter mechanism** | ☐ Plain: 1,500,000 cuts<br>☐ Matte: 750,000 cuts<br>☐ Wristband (WB-S/M/L series): 200,000 cuts<br>☐ Die-cut label (Plain): 1,500,000 cuts<br>☐ Die-cut label (Matte): 1,500,000 cuts<br>☐ Die-cut label (Synthetic): 500,000 cuts<br>☐ Die-cut label (Glossy): 1,500,000 cuts<br>☐ Full-page label (Plain): 750,000 cuts<br>(Cleaning the cutter blade will add an extra 250,000 cuts.)<br>☐ Full-page label (Matte): 500,000 cuts<br>☐ Full-page label (Synthetic): 100,000 cuts<br>☐ Full-page label (Glossy): 300,000 cuts |
| **MTBF**[*1] | | 88,000 hours |

| Item | Specification |
|---|---|
| **MCBF** [*2] | 9,800,000 passes |

*1: Failure is a random failure occurring during the random failure period.

*2: This is the overall mean time between failures, including failures relating to wear out and random failures up to the product lifetime (6 million passes).

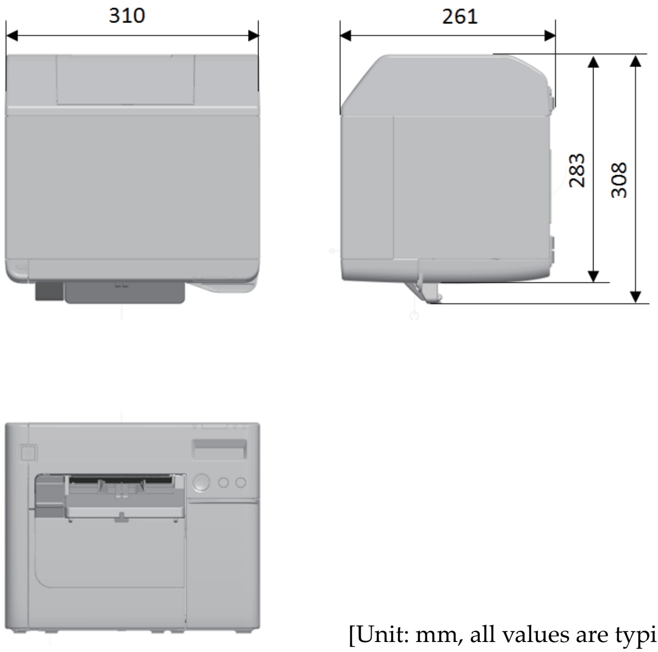
## *Environmental specifications*

| Item | | | Specification |
|---|---|---|---|
| **Temperatures** | **Printing** | | 10 to 35°C {50 to 96°F} |
| | **Bar code printing** | | 15 to 35°C {59 to 96°F} |
| | **Storage** | **When packed** | -20 to 60°C {-4 or 140°F} (At -20 or 60°C for up to 120 hours) |
| | | **With ink loaded** | -20 to 40°C {-4 to 104°F} (At -20°C for up to 120 hours; At 0 to 30°C {32 to 86°F} for up to 6 months; At 40°C for up to 1 month) |
| **Humidity** | **Operating** | | 20 to 80%RH (No condensation) |
| | **Bar code printing** | | 20 to 80%RH (No condensation) |
| | **Storage** | **When packed** | 5 to 85%RH (No condensation, ink not loaded) |
| | | **With ink loaded** | 5 to 85%RH (No condensation) |
| Temperatures and humidity must be in this range. |  | | |
| **Absolute maximum rated**[*1] | | | 70°C {158°F} |
| **Pressure (elevation)** | | **Operating** | 850 to 1060 hPa (Corresponding to 0 to 1,500 m {approximately 0 to 8202′} above sea level) |
| | | **Not operating**[*2] | 850 to 1060 hPa (Corresponding to 0 to 1,500 m {approximately 0 to 8202′} above sea level) |
| **Acoustic noise (operating)** | | | Approximately 58 dB average (including using the autocutter) |

*1: This temperature must NOT be exceeded during operation or storage.
*2: Including during transportation.

## *Main unit size*

| Item | Specification |
|---|---|
| **Dimension** | W 310 mm × D 283 mm × H 261 mm {12.20" × 11.14" × 10.28"}<br>(The protrusion is excluded.) |
| **Mass** | Approximately 12 kg {26.45 lb}<br>(Ink cartridge and roll paper excluded) |



[Unit: mm, all values are typical]

**Figure 1-3. Dimensional drawing**

## *Interface*

☐ USB interface

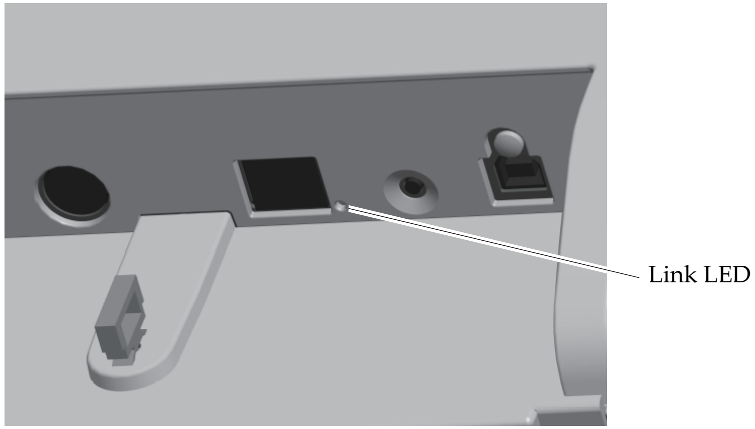
| Item | Specification |
|---|---|
| **Specifications** | USB 2.0 High-speed |
| **USB bus current consumption (+5V)** | 0 mA (All supplied by the printer unit.) |

☐ Ethernet interface

| Item | Specification |
|---|---|
| **Specifications** | Compliant with IEEE 802.3 specifications |
| **Communication speed** | 100BASE-TX/10BASE-T (Automatically selected or fixed) |

| Protocol | Type | Port No. | Purpose |
|---|---|---|---|
| LPR (LPD) | TCP | 515 | Printing |
| Port9100 | TCP | 9100 | Printing |
| HTTP | TCP | 80 | Browsing Web contents, updating the printer's firmware, WSD printing |
| SNMP | UDP | 161 | Viewing the network status, viewing/ changing the network settings |
| ENPC | UDP | 3289 | Viewing the network status, viewing/ changing the network settings |
| DHCP | UDP | 68 | Obtaining an IP address from the DHCP server |
| DNS | TCP/UDP | 53 | Name resolution (Searching the IP address from the host computer name) |
| SNMP TRAP | UDP | 162<br>(Default) | Notifying failures<br>(Port number can be changed by user) |

The Link LED indicates the printer network status according to the following table.



| Printer status | Link LED (Color: green) |
|---|---|
| Power off | Off |
| Not connected to the network | Off |
| Network established | On |
| Receiving data | Blinking |

# *Part Names and Functions*

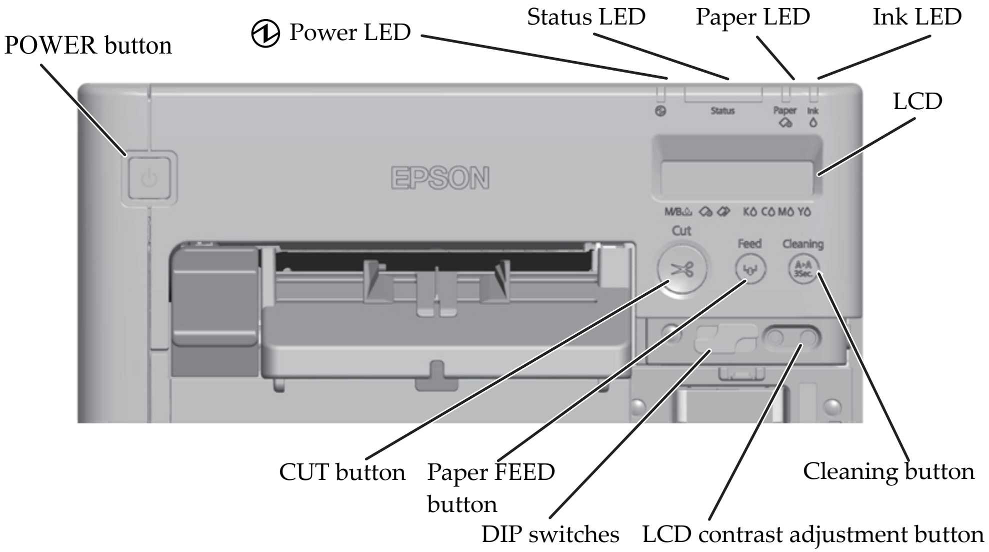

POWER button
⏻ Power LED
Status LED
Paper LED
Ink LED
LCD
EPSON
Status
Paper
Ink
Cut
Feed
Cleaning
CUT button
Paper FEED button
DIP switches
LCD contrast adjustment button
Cleaning button

**Figure 1-4. External view (front)**

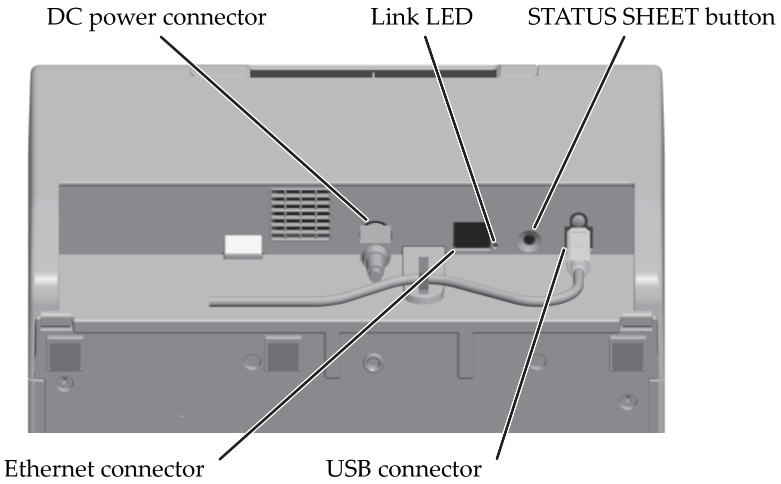

DC power connector
Link LED
STATUS SHEET button
Ethernet connector
USB connector

**Figure 1-5. External view (rear)**

☐ LEDs

| LED | Status |
|---|---|
| ⏻ (Power) LED | LED that indicates the printer's power status. |
| Status LED | LED that indicates the printer's error status. |
| Ink LED | LED that indicates the printer's ink status. |
| Paper LED | LED that indicates the printer's paper status. |
| Link LED | LED that indicates the printer's network status. |

☐ Buttons

| Name | Function |
|---|---|
| POWER button | ☐ When DIP switch 1 is OFF<br>Turns the power on after the POWER button has been pressed while the power is OFF.<br>Turns the power off after the POWER button has been pressed for approximately 0.5 seconds while the power is ON.<br>☐ When DIP switch 1 is ON<br>Resets the printer after POWER button has been pressed for approximately 0.5 seconds. |

| Name | Function |
|---|---|
| CUT button | TM-C3500/C3510/C3520 is not equipped with a cutter blade for manual cutting, so manual cutting cannot be performed. Use of the CUT button instead of manual cut operation can cut the paper at the desired timing.<br>Performs the following operations by making the settings for paper position detection:<br>☐ If “Media position detection settings” is set to “Full-page label/Continuous paper/Transparent full-page label”, feeds the paper to the autocutting position for the top of the next page, and performs autocutting.<br>☐ If “Media position detection settings” is set to “Die-cut label (BM)”, “Black mark continuous paper”, or “Die-cut label (Gap)/Transparent die-cut label”, feeds the paper to the autocutting position according to the black mark or the gap between labels, and performing autocutting.<br>However, in order to prevent errors due to pieces of paper, even if you press the cut button again, cutting is not performed in a position where cutting was already performed.<br>☐ Approximately 2 seconds is required from the point when the CUT button is pressed until the point when paper cut starts. |

| Name | Function |
|---|---|
| Paper FEED button | Feeds the paper continuously or to the print starting position by making the settings for paper position detection.<br>☐ If “Media position detection settings” is set to “Full-page label/Continuous paper/Transparent full-page label”, feeds the paper continuously. Feeds 15 mm {0.59"} of paper when pressed once briefly. If the button is held down continuously, feeds the paper continuously until the button is released. The maximum length of continuous paper feeding is approximately 6 seconds.<br>☐ If “Media position detection settings” is set to “Die-cut label (BM)”, “Black mark continuous paper”, or “Die-cut label (Gap)/Transparent die-cut label”, feeds the paper to the print starting position.<br>☐ When the printer is in the power saving mode when its vacuum fan is stopped, starting up and stabilizing the rotation of the vacuum fan requires some time. Approximately 2 seconds is required from the point when the paper FEED button is pressed until the point when paper feed starts. |

<table>
<tr><th>Name</th><th>Function</th></tr>
<tr><td>Cleaning button</td><td>If the cleaning button is held down for approximately 3 seconds, head cleaning is performed.<br>The following settings are possible from the driver regarding cleaning operations when the cleaning button is held down.
<table>
<tr><td>No.</td><td>During stand-by</td><td>During printing</td></tr>
<tr><td>1</td><td>Disabled</td><td>Disabled</td></tr>
<tr><td>2</td><td>Head cleaning performed</td><td>Disabled</td></tr>
<tr><td>3</td><td>Head cleaning performed</td><td>Printing canceled -> head cleaning performed -> printing resumed</td></tr>
</table></td></tr>
<tr><td>STATUS SHEET button</td><td>Press the status sheet button to print the status sheet.<br>If you turn on the power while holding the status sheet button, and continue to hold it for 10 seconds or more, you can return the Ethernet interface settings to factory default settings.</td></tr>
<tr><td>LCD contrast adjustment button</td><td>Press the LCD contrast adjustment button inside the ink cartridge cover to adjust the contrast of the LCD. The adjusted value is saved in the non-volatile memory. Even after the power is turned on again, the adjusted value saved last time is applied.</td></tr>
</table>

# Indicators

## Indicators

| Printer Status | LCD | LED | | | | |
|---|---|---|---|---|---|---|
| | | Status Green | Status Orange | Power Green | Paper Orange | Ink Orange |
| In ready | READY | ON | OFF | Flashing | --- | --- |
| In initializing | INITIALIZING | ON | OFF | Flashing | --- | --- |
| In power off sequence | POWER OFF | ON | OFF | Flashing (Fast) | --- | --- |
| In printing | PRINTING | ON | OFF | Flashing | --- | --- |
| In ink charging | INK CHARGING | ON | OFF | Flashing | --- | --- |
| In working | WORKING | ON | OFF | Flashing | --- | --- |
| In print head maintenance state | HEAD MAINTENANCE | ON | OFF | Flashing | --- | --- |
| Media form error | MEDIA FORM ERROR | OFF | Flashing | --- | ON | --- |
| Media size error | MEDIA SIZE ERROR | OFF | Flashing | --- | ON | --- |
| Paper jam error | PAPER JAM ERR ## | OFF | Flashing | --- | ON | --- |
| Paper removal error | PAPER REMOVAL ER | OFF | Flashing | --- | ON | --- |
| Paper out | PAPER OUT | --- | --- | --- | ON | --- |
| Paper out error | PAPER OUT ERROR | OFF | Flashing | --- | ON | --- |
| Roll paper cover open | ROLL COVER OPEN | OFF | Flashing | --- | ON | --- |
| Ink cartridge cover open | INK COVER OPEN | OFF | Flashing | --- | --- | ON |
| No ink cartridge | NO INK CARTRIDGE | OFF | Flashing | --- | --- | ON |
| Ink cartridge read error | INK READ ERROR | OFF | Flashing | --- | --- | ON |
| Maintenance box cover open | M/B COVER OPEN | OFF | Flashing | --- | --- | ON |
| No maintenance box | NO MAINT BOX | OFF | Flashing | --- | --- | ON |

| Printer Status | LCD | LED | | | | |
|---|---|---|---|---|---|---|
| | | **Status Green** | **Status Orange** | **Power Green** | **Paper Orange** | **Ink Orange** |
| Maintenance box read error | M/B READ ERROR | OFF | Flashing | --- | --- | ON |
| Ink cartridge low | INK LOW | --- | --- | --- | --- | Flashing |
| Replace ink cartridge | REPLACE INK | OFF | Flashing | --- | --- | ON |
| Maintenance box near full | M/B NEAR FULL | --- | --- | --- | --- | Flashing |
| Replace maintenance box | REPLACE MAINT B | OFF | Flashing | --- | --- | ON |
| Print head nozzle clogged | NOZZLE CLOGGED | --- | --- | --- | --- | --- |
| In cutter unavailable state | CUT UNAVAILABLE | --- | --- | --- | --- | --- |
| In service mode | SERVICE MODE | --- | --- | --- | --- | --- |
| Service due soon | SERVICE SOON ## | --- | --- | --- | --- | --- |
| Printer error | PRINTER ERROR ## | OFF | Flashing | Flashing | Flashing | Flashing |
| Service required | SERVICE REQD. ## | OFF | Flashing | Flashing | Flashing | Flashing |
| In firmware updating | UPDATING | ON | ON | ON | Flashing/ON | OFF/Flashing |
| Complete the firmware updating | UPDATING | ON | ON | ON | ON | ON |
| Failure in firmware updating | UPDATING | ON | ON | ON | Flashing | Flashing |
| Disable auto nozzle check system*1 | NOZZLE CHECK OFF | --- | Flashing 2 | ON | --- | --- |

Flashing (ON:OFF=1:1), Flashing 2 (ON:OFF=1:9), -: no change, ##: error code

Note 1: For details about errors and how to clear them, refer to page 88, " Troubleshooting from the messages on the LCD."

2: If "LED notification setting at low ink" is set not to be displayed, blinking the Ink LED for "Ink cartridge low" and "Maintenance box near full" is not performed.

3: If "Printer error" occurs, the printer will not recover until you perform the proper processing, then turn the power on again.

4: If "Service required" occurs, the printer will not recover until the necessary repair is performed and the necessary area of the nonvolatile memory is overwritten.

*1: When Firmware version is over than WAD31000 or over than WAM 31000 and it sets function by specific tool as disclosure scope level 4 or the adjustment program.

# LCD Display

☐ Format of the LCD display

Character format: 16 characters by 2 rows

Row 1 displays the printer’s status.

Row 2 displays the status of the ink cartridges and maintenance box, as shown in each position in the figure below.

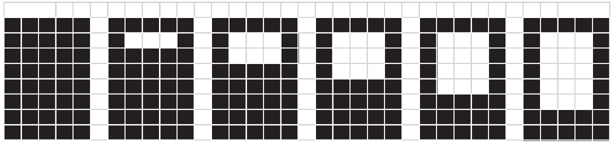
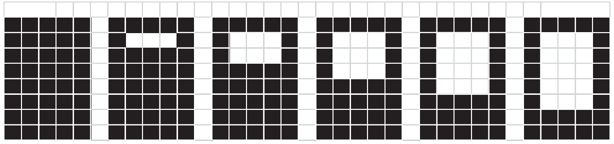
| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |
| | | M/B | | | | | | K ink | | C ink | | M ink | | Y ink | |

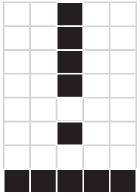
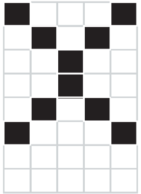
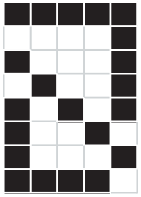
M/B: Maintenance box, K ink: black ink,
C ink: cyan ink, M ink: magenta ink, Y ink: yellow ink.

**Figure 1-6. LCD display**

☐ Display of the ink cartridge, maintenance box status

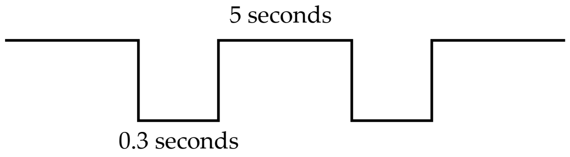
The status of each ink cartridge and the maintenance box is displayed using the following icons at the corresponding positions.

| Item | Display |
|---|---|
| Display of amount remaining for the ink cartridge | Remaining High Remaining Low  |
| Display of amount used for the maintenance box | Amount used: Low Amount used: High  |

| Item | Display |
|---|---|
| ☐ Ink cartridge low<br>☐ Maintenance box near full |  |
| ☐ Replace ink cartridge<br>☐ Replace maintenance box |  |
| ☐ No ink cartridge<br>☐ Ink cartridge read error<br>☐ No maintenance box<br>☐ Maintenance box read area |  |

## Buzzer

When an error occurs while “Buzzer notification on an error” is enabled in the printer driver, the buzzer beeps. When “Sound the buzzer on printing end” is enabled, the buzzer beeps during printing.

| **Item** | | **Specification** | |
|---|---|---|---|
| When error occurs | Status | ☐ Service required<br>☐ Printer error<br>☐ Roll paper cover open<br>☐ Ink cartridge cover open<br>☐ Replace ink cartridge<br>☐ No ink cartridge<br>☐ Ink cartridge read error<br>☐ Maintenance box cover open<br>☐ Replace maintenance box<br>☐ No maintenance box<br>☐ Maintenance box read error<br>☐ Media form error<br>☐ Media size error<br>☐ Paper jam error<br>☐ Paper out error *2<br>☐ Paper removal error | |
| | Pattern |  | |
| | Repeats | ☐ Repeat the patten (On-Off: three times) in every 5 sec.<br>☐ Until the error factor is removed | |
| During printing | Status | ☐ Each page | ☐ On last page |
| | Pattern | 0.3 seconds for 1 time | |
| | Repeats | None | |

Note 1: The beeper volume can be set on the hardware with DIP switch 8, but cannot be set with the firmware.

2: When the paper is in “Paper out” status, which is without printing data, the beeper does not sound.

# DIP Switch Settings

To access the DIP switches, open the ink cartridge cover and remove the DIP switch cover.

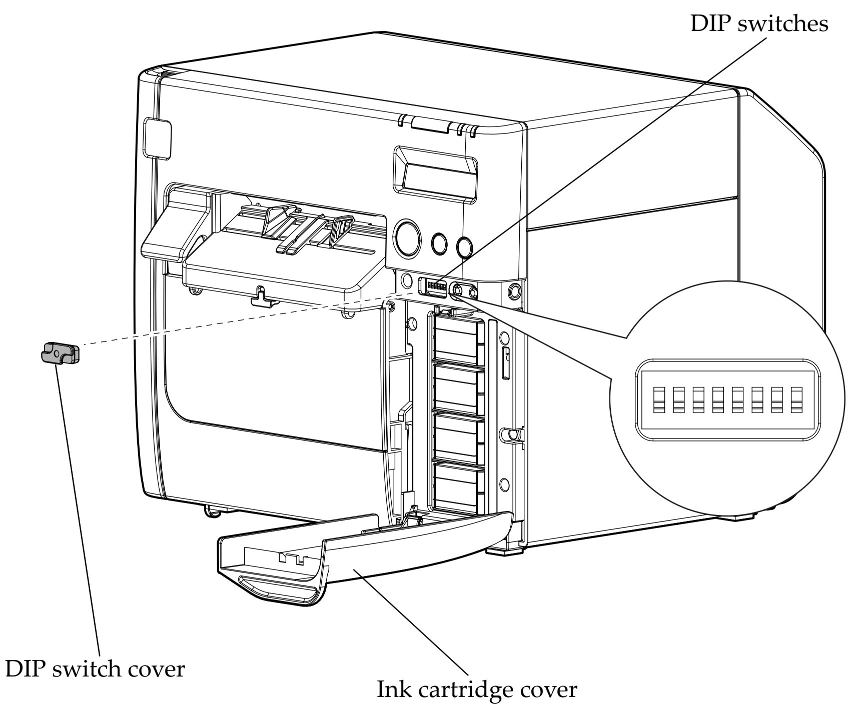


**Figure 1-7. DIP switch position**

| Switch No. | Default | ON | OFF |
|---|---|---|---|
| 1 | OFF | Power switch: Disabled<br>(Reset operation) | Power switch: Enabled<br>(Power ON/OFF operation) |
| 2[*1] | OFF | Starts up in firmware rewriting mode | Starts up in normal mode |
| 3[*4] | OFF | Vertical mask<br>Bottom check -2.5mm | Vertical Mask<br>Bottom check -1.0mm |
| 4[*2] | OFF | Auto nozzle check Disabled<br>Head cleaning Disabled | Auto nozzle check Enabled<br>Head cleaning Enabled |
| 5 to 7 | OFF | Language settings (Refer to the table below) | |
| 8[*3] | OFF | Beeper volume: High | Beeper volume: Low |

*1: Do not change DIP switch 2 unless the firmware is to be rewritten.

*2: When DIP switch 4 is ON (automatic nozzle check is disabled), all of the automatic nozzle checks are disabled. Therefore, do not use this setting for any purpose other than repair or inspection.

*3: The buzzer volume can be set on the hardware with DIP switch 8, but cannot be set with the firmware.

*4: When Switch No. 3 is ON, it expands printable area for paper feeding direction. Switch No. 3 applies to the following firmware versions and driver versions:
Firmware: WAD31000 or later, WAM31000 or later
Drivers: Ver.2.0.0.0 or later

☐ Language settings

| SW number | | | Language setting |
|---|---|---|---|
| 5 | 6 | 7 | |
| OFF | OFF | OFF | Japanese (Kana) |
| OFF | OFF | ON | English |
| OFF | ON | OFF | French |
| OFF | ON | ON | Italian |

| SW number | | | Language setting |
|---|---|---|---|
| 5 | 6 | 7 | |
| ON | OFF | OFF | German |
| ON | OFF | ON | Spanish |
| ON | ON | OFF | Portuguese |
| ON | ON | ON | Dutch |

# Auto Nozzle Check System

TM-C3500/C3510/C3520 has an “Auto nozzle check system” that detects missing dots. You can select the “Nozzle check mode” depending on level of requirement for missing dots.

| Timing for auto nozzle check | Anti-missing Dot Mode | Anti-missing Read Mode (default) | Anti-missing Color Mode | No Missing Dot Detection Mode |
|---|---|---|---|---|
| At printer power-on | Performed | Performed | Performed | Not Performed |
| During a pause | Performed | Performed | Performed | Not Performed |
| After printing page | Not Performed | Not Performed | Not Performed | Not Performed |
| Regular check during continuous printing | Performed | Performed | Performed | Not Performed |
| After cleaning the print head | Performed | Performed | Performed | Not Performed |
| After closing the roll cover | Performed | Performed | Performed | Not Performed |
| After closing the ink cover | Performed | Performed | Performed | Not Performed |
| After closing the maintenance box cover | Performed | Performed | Performed | Not Performed |
| After detecting a shock | Performed | Performed | Performed | Not Performed |
| Permitted missing dots | None | 1 missing dot or less | No 3 consecutive missing dots and less than 10 missing dots | --- |
| Auto cleaning conditions | 1 missing dot or more | 2 missing dots or more | 3 or more consecutive dots or 10 or more missing dots | --- |

| Mode | Movement overview |
|---|---|
| Anti-missing Dot Mode | The auto nozzle check is performed at each timing, and by performing the auto head cleaning when necessary, missing dots are prevented.<br>Because the nozzle check is performed periodically during continuous printing, printing may be interrupted for approximately 8 seconds.<br>If more than 1 missing dot is detected, the auto head cleaning is performed to resolve the missing dot. |
| Anti-missing Read Mode | The auto nozzle check is performed at each timing, and by performing the auto head cleaning when necessary, missing reads due to missing dots are prevented.<br>Because the nozzle check is performed periodically during continuous printing, printing may be interrupted for approximately 8 seconds.<br>If more than 2 missing dots are detected, the auto head cleaning is performed to resolve the missing dots. |
| Anti-missing Color Mode | The auto nozzle check is performed at each timing, and by performing the auto head cleaning when necessary, missing colors due to missing dots are prevented.<br>Because the nozzle check is performed periodically during continuous printing, printing may be interrupted for approximately 8 seconds.<br>If 3 or more consecutive missing dots or 10 missing dots or more are detected, the auto head cleaning is performed to resolve the missing dots. |
| No Missing Dot Detection Mode | The auto nozzle check and the auto head cleaning are not performed. |
| No Missing Dot Detection Mode at out of guarantied temperature of printer operation | This function is set by special tool as Disclosure scope 4 or the adjustment program. It is not able to set this function by printer driver.<br>Within guarantied temperature of printer operation, it works missing dot detection. But less than or more than guarantied temperature of printer operation, it works printer but it does not work missing dot detection. During it does not work missing dot detection, it displays “NOZZLE CHECK OFF” message on the LCD and blinking Status Orange LED as ON:OFF / 1:9.<br>The function applies to the following firmware versions:<br>Firmware: WAD31000 or later, WAM31000 or later |

Note 1: This “Auto nozzle check” system cannot detect 100% of dot missing cases.

2: A very small amount of ink is used in the missing dot detection.

3: After detecting a missing dot, cleaning is performed automatically and ink is also used in the cleaning.

4: In “Anti-missing Dot Mode”, “Anti-missing Read Mode”, and “Anti-missing Color Mode” the auto nozzle check is performed at certain intervals, so the auto nozzle check may occur even during printing.

5: In case extremely high reliability and safety is required, Epson recommends the use of a visual dot missing detection pattern using composite black, in combination of the auto nozzle check system.

6: In cases extremely high reliability and safety is required, Epson recommends the use of font constructed of 3 vertical dots or more in “Anti-missing Dot Mode” or “Anti-missing Read Mode” to prevent misreadings due to missing dots or ink drop distortions. For example, if using Microsoft Windows Arial font, the 6 pt size or larger has 3 vertical dots or more. (When the printed graphic resolution is 360 × 360 dpi).

7: After missing dot detection, if there is a clog in the nozzle which cannot be fixed by auto cleaning, the following operations are performed.

- ☐After repeating the auto cleaning, if the missing dots don’t still meet conditions for no auto cleaning, the “Nozzle clogged” warning is output.
- ☐Even when the “Nozzle clogged” warning is output, if the result of the auto nozzle check is below or at the permitted missing dots, “Updating unfixable nozzle” and “Clearing nozzle clogged warning” are performed.
- ☐When the “Nozzle clogged” warning is output, the auto cleaning condition is if a new missing dot occurred.

# STANDARD ACCESSORIES

☐ Dedicated AC adapter: AC adapter, K

☐ AC cable: May not be included, depending on specifications.

☐ Ink cartridge: TM-C3500 SJIC22P(K)/SJIC22P(C)/SJIC22P(M)/SJIC22P(Y)
TM-C3510 SJIC23P(K)/SJIC23P(C)/SJIC23P(M)/SJIC23P(Y)
TM-C3520 SJIC24P(K)/SJIC24P(C)/SJIC24P(M)/SJIC24P(Y)

☐ Maintenance box: SJMB3500

☐ USB cable

☐ Paper ejection tray

☐ Paper feed guide dedicated for fanfold paper (Attached inside of the fanfold paper cover.)

☐ POWER button cover

☐ Label roll paper

☐ User’s manual

☐ CD-ROM

# CHAPTER
# 2

# OPERATING PRINCIPLES

# Overview

This chapter describes operating principles of main components and electric circuits.

## Printer Mechanism

The main electric circuits of this product are as follows.

- ☐ " Print head" (p. 47)
- ☐ " Carriage Mechanism" (p. 48)
- ☐ " Suction Mechanism" (p. 50)
- ☐ " Paper Out / Feeding Mechanism" (p. 51)
- ☐ " Ink Supply Mechanism" (p. 55)
- ☐ " Valve Mechanism" (p. 57)
- ☐ " Press Pump Mechanism" (p. 58)
- ☐ " Ink System" (p. 60)
- ☐ " Auto Ink Detector (AID) Mechanism" (p. 62)

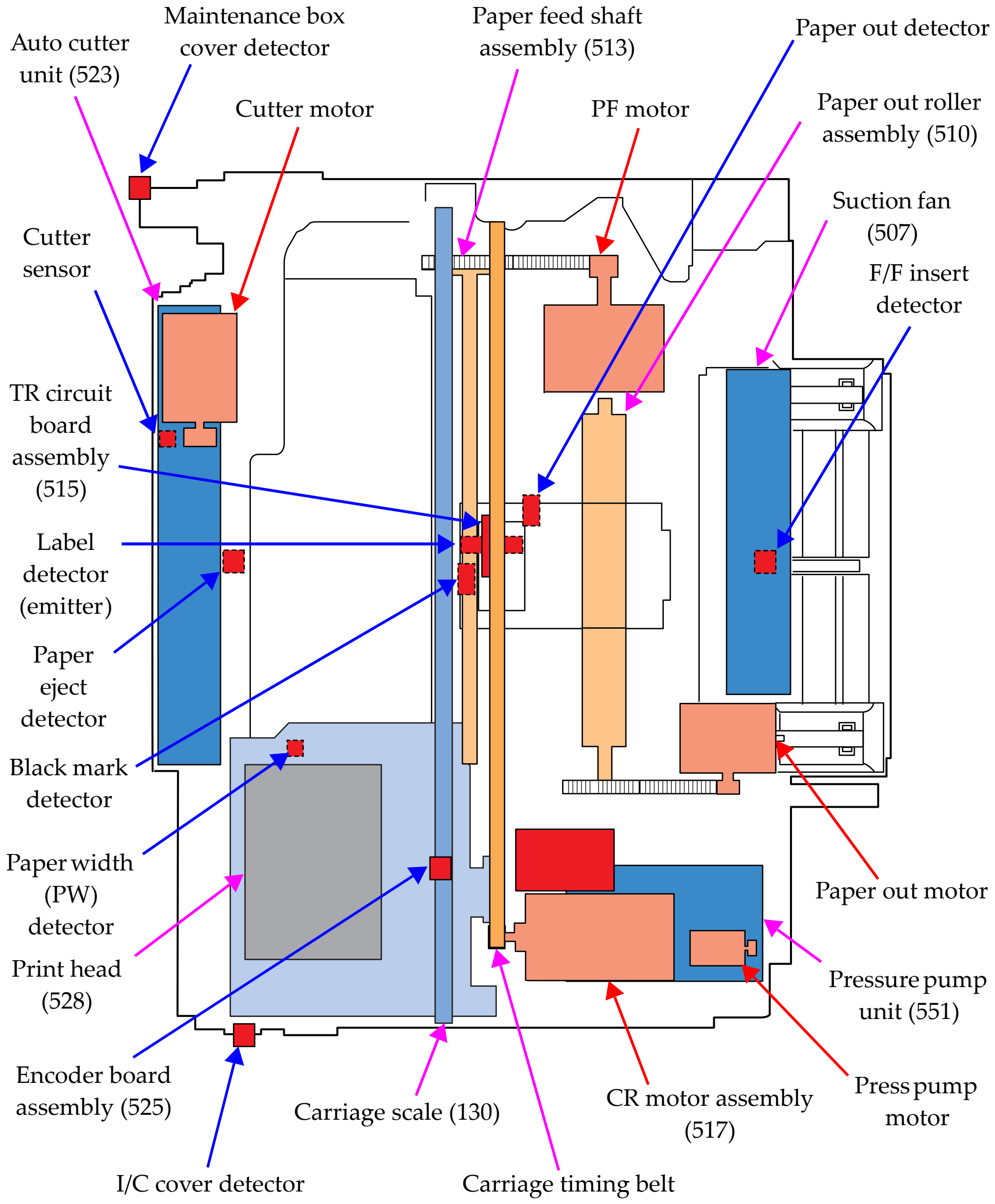

Auto cutter unit (523)
Maintenance box cover detector
Paper feed shaft assembly (513)
Paper out detector
Cutter motor
PF motor
Paper out roller assembly (510)
Suction fan (507)
Cutter sensor
F/F insert detector
TR circuit board assembly (515)
Label detector (emitter)
Paper eject detector
Black mark detector
Paper width (PW) detector
Print head (528)
Paper out motor
Pressure pump unit (551)
Encoder board assembly (525)
Carriage scale (130)
CR motor assembly (517)
Press pump motor
I/C cover detector
Carriage timing belt

**Figure 2-1. Printer mechanism block diagram**

## *Motors and Sensors*

| Mechanism | Motor | No. |
|---|---|---|
| Carriage mechanism | CR motor assembly (517) | A |
| Paper loading/feed mechanism | PF motor | B |
| | Paper out motor | C |
| | Pressure motor | D |
| Ink supply mechanism | Pump motor | E |
| Press pump mechanism | Pressure motor | F |

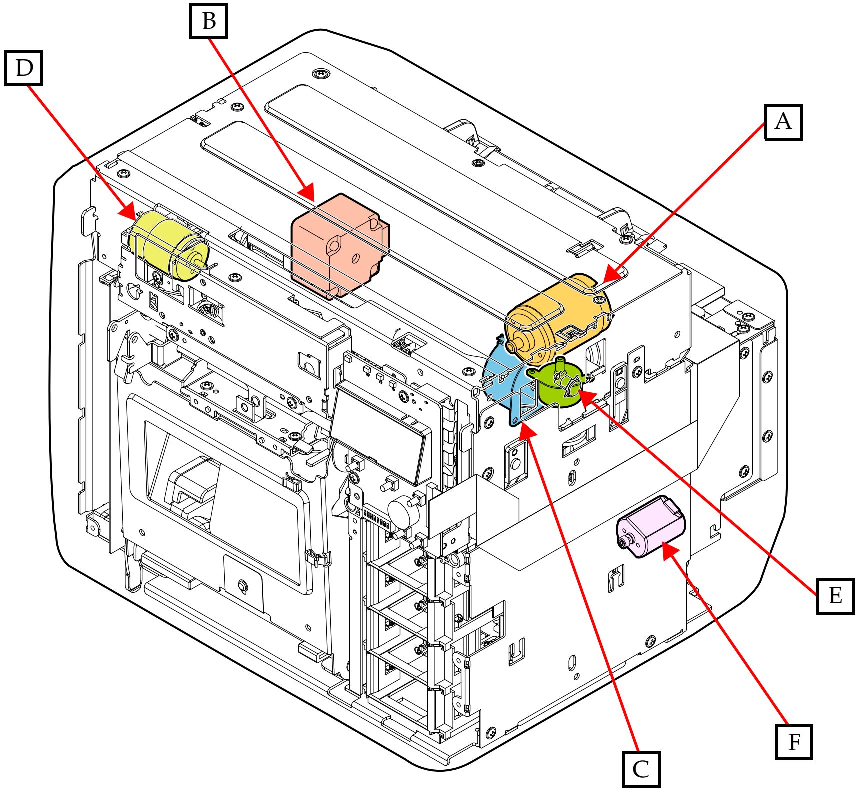


**Figure 2-2. Motor**

| Mechanism | Sensor | No. |
|---|---|---|
| Carriage mechanism | Encoder board assembly (525) | 1 |
| | Paper width (PW) detector | 2 |
| Paper loading/feed mechanism | Cutter sensor | 3 |
| | TR circuit board assembly (515) | 4 |
| | Black mark detector | 5 |
| | Label detector (emitter) | 6 |
| | Paper out detector | 7 |
| | Paper eject detector | 8 |
| | F/F insert detector | 9 |
| Ink supply mechanism | I/C cover detector | 10 |
| | Maintenance box cover detector | 11 |
| Auto ink detector mechanism | Acceleration sensor board assembly (538) | 12 |

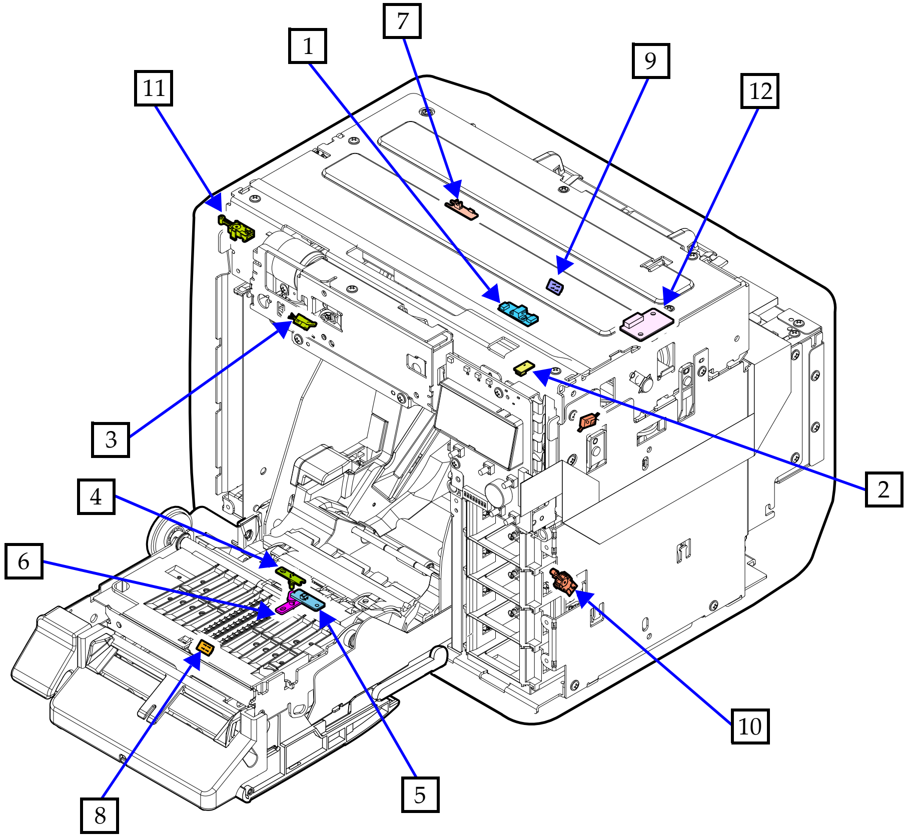


**Figure 2-3. Sensor**

# *Printer Mechanism Operating Principles*

## *Print head*

☐ Print method: Serial ink jet, dot matrix

☐ Nozzle configuration:

| Item | Model |
|---|---|
| **Color type** | Black, Cyan, Magenta, Yellow |
| **Nozzle configuration** | 360 nozzles for each color |

☐ Print direction: Bi-directional printing with logic seeking and unidirectional printing

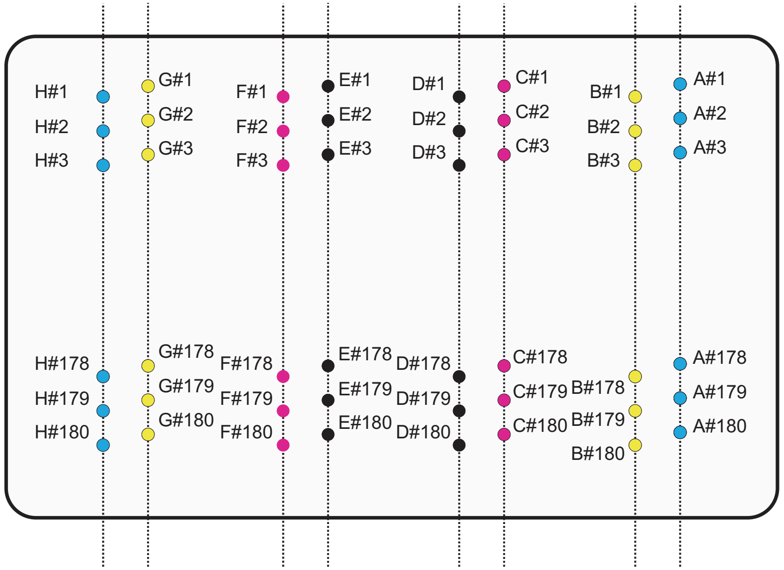

H#1
H#2
H#3
G#1
G#2
G#3
F#1
F#2
F#3
E#1
E#2
E#3
D#1
D#2
D#3
C#1
C#2
C#3
B#1
B#2
B#3
A#1
A#2
A#3
H#178
H#179
H#180
G#178
G#179
G#180
F#178
F#179
F#180
E#178
E#179
E#180
D#178
D#179
D#180
C#178
C#179
C#180
B#178
B#179
B#180
A#178
A#179
A#180

**Figure 2-4. Nozzle layout**

## *Carriage Mechanism*

The carriage mechanism operates the carriage assembly (516) including the print head (528) properly. The carriage mechanism components include the carriage motor (CR motor assembly (517)), CR timing belt, CR scale (130) and so on.

The carriage assembly (516) is driven by the CR motor assembly (517) and moves along the carriage shaft (514). Then, it stops at the print start position detected by the PW detector board assembly. The encoder board assembly (525), which is included in the carriage assembly (516), detects the position of the carriage assembly (516) by reading the pattern of the CR scale (130).

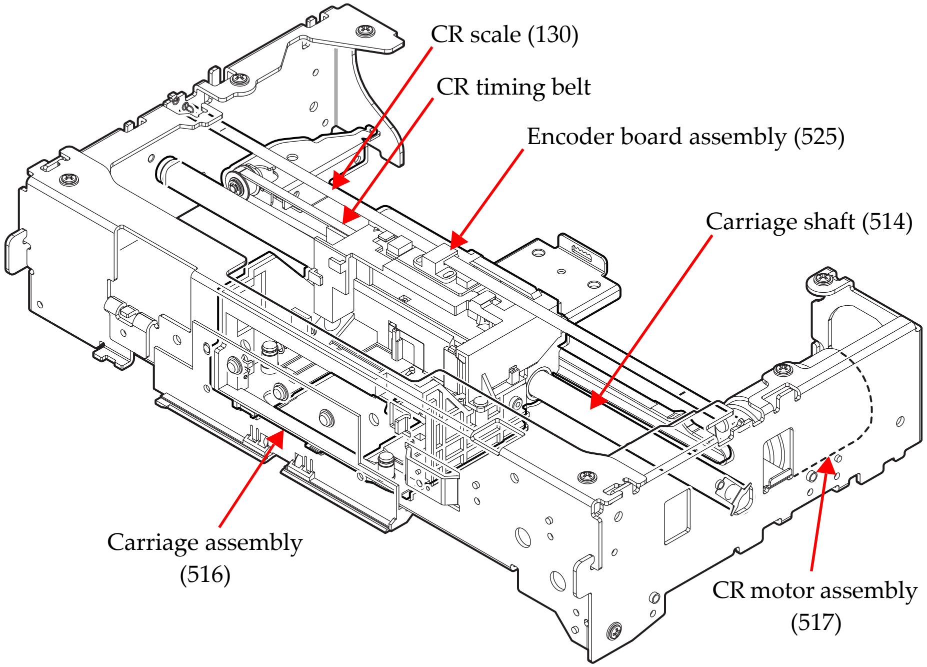

CR scale (130)
CR timing belt
Encoder board assembly (525)
Carriage shaft (514)
Carriage assembly (516)
CR motor assembly (517)

**Figure 2-5. Carriage mechanism**

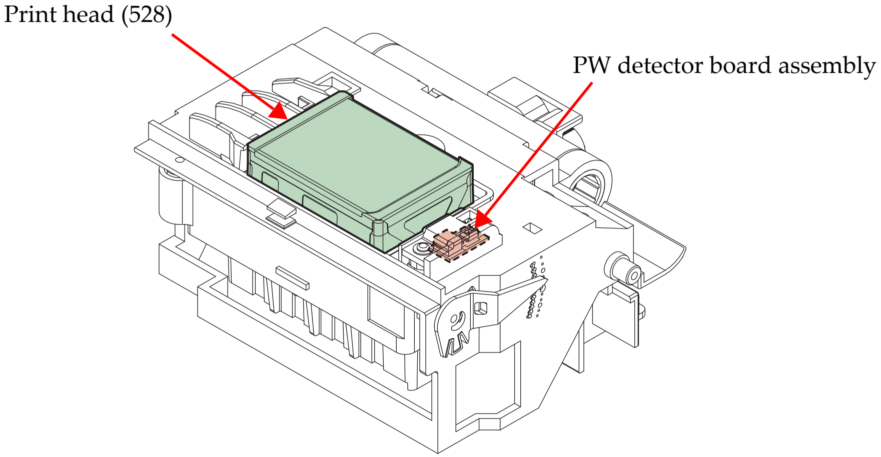

Print head (528)
PW detector board assembly

**Figure 2-6. Bottom of the carriage assembly**

## *Motor and sensor specifications*

☐ CR motor

The CR motor (517) uses a DC motor (with brushes) as the drive source. To control the carriage speed and position, the motor is controlled according to the information obtained via the encoder board assembly (525).
The DC motor, as its characteristic, can cause excessive heat in continuous operations. To avoid this, whether the motor is driven or not, a heating value is calculated at regular intervals to monitor the motor temperature while the power is ON. When the motor temperature exceeds a specified value, the operation is forcibly paused for a specified period of time.

| Item | | Specification |
|---|---|---|
| **Type** | | DC motor with brushes<br>(Mabuchi motor RS455PA-17155) |
| **Voltage** | | 42 V (direct voltage) ± 5%<br>(voltage applied to driver) |
| **Feature** | **Armature resistance** | 15.0 Ω ± 10% |
| | **Inductance** | 10.1 mH (1 KHz) |
| | **Rotor inertia** | 22.2 $gcm^2$ |
| **Drive method** | | PWM, constant-current chopping |
| **Driver** | | BD64532EKV (ROHM Co., Ltd.) |

☐ CR encoder detector (Encoder board assembly (525))

| Item | Specification |
|---|---|
| **Type** | Transmissive photo interrupter<br>(KODENSHI KE-2K20F-18) |
| **Power supply voltage** | 3.3 V DC ± 5% |

☐ PW detector

- ■ Detection item
  - Left and right edges of paper

| Item | | Specification |
|---|---|---|
| **Type** | | Reflective photo interrupter (SHARP GP2S700) |
| **Power supply voltage** | | 3.3 V DC ± 5% |
| **Detected state** | **Paper present** | L: Reflection detected |
| | **Paper absent** | H: No reflection |

## Suction Mechanism

The suction mechanism keeps the paper on the platen flat enough to stabilize the printing operation. To keep the paper flat, the suction fan (507) sucks the air from the inside of the platen to pull the paper to the platen.

A movable platen is mounted on this printer. By sliding the platen slider, the suction area can be adjusted according to the width of the paper you use.

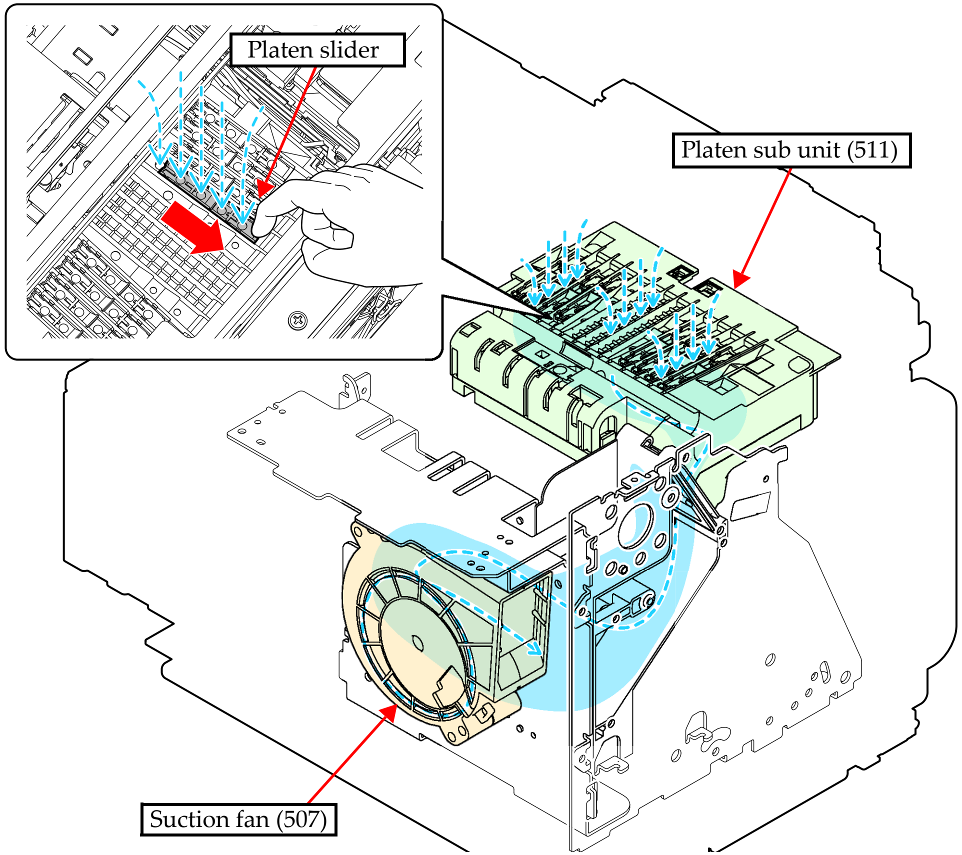


**Figure 2-7. Suction Mechanism**

## Motor specifications

☐ Fan motor

| Item | Specification |
|---|---|
| **Type** | Brushless DC motor<br>(NIDEC E1033L24-0900) |
| **Power supply voltage** | 20.4 VDC to 26.4 VDC |
| **Driving voltage** | 25.1 V DC ± 5% |
| **Rated rotation speed***[1] | Standard value: 5800 (rpm)<br>Minimum value: 5200 (rpm) |
| **Maximum air volume***[1] | Standard value: 1.25 ($m^3$/min)<br>Minimum value: 1.13 ($m^3$/min) |
| **Maximum static pressure***[2] | Standard value: 840 (Pa)<br>Minimum value: 700 (Pa) |
| **Rated current***[1] | Standard value: 0.95 (A)<br>Maximum value: 1.12 (A) |
| **Lock current** | Standard value: 2.1 (A) (24 VDC)<br>Maximum value: 2.5 (A) (24 VDC) |
| **Starting current** | Standard value: 2.1 (A) (24 VDC)<br>Maximum value: 2.5 (A) (24 VDC) |

*1: Duty 100%, Air volume free air, 24 VDC

*2: Duty 100%, Air volume 0 ($m^3$/min), 24 VDC

## Paper Out / Feeding Mechanism

There are two paper path in this printer. Each paper feed sequence is described below.

☐ Roll paper

1. The drive force of the paper out motor is transmitted via a spur gear to the paper out roller assembly (510).
2. The roll paper is fed forward by the drive shaft and the paper out roller assembly (510) which nip the roll paper.
3. When the fed paper is label paper, the TR circuit board assembly (515) and the label detector (Emitter) detect the location of labels based on the difference of the transmittance between the labels and backing paper on the label paper.
4. When the fed paper is black mark receipt paper, the black mark detector detects the presence of black marks on the paper.
5. If the fed roll paper goes slack, the paper out cover rises. Then, the lever of the paper out cover goes off from the detector section of the paper out detector, and the detector's status changes to "not shaded".
6. The paper out motor stops.
7. The drive force of the PF motor is transmitted via a spur gear to the paper out roller assembly (510).
8. The roll paper is fed forward by the paper feed shaft assembly (513).
9. After printing, the roll paper is cut by the auto cutter unit (523).

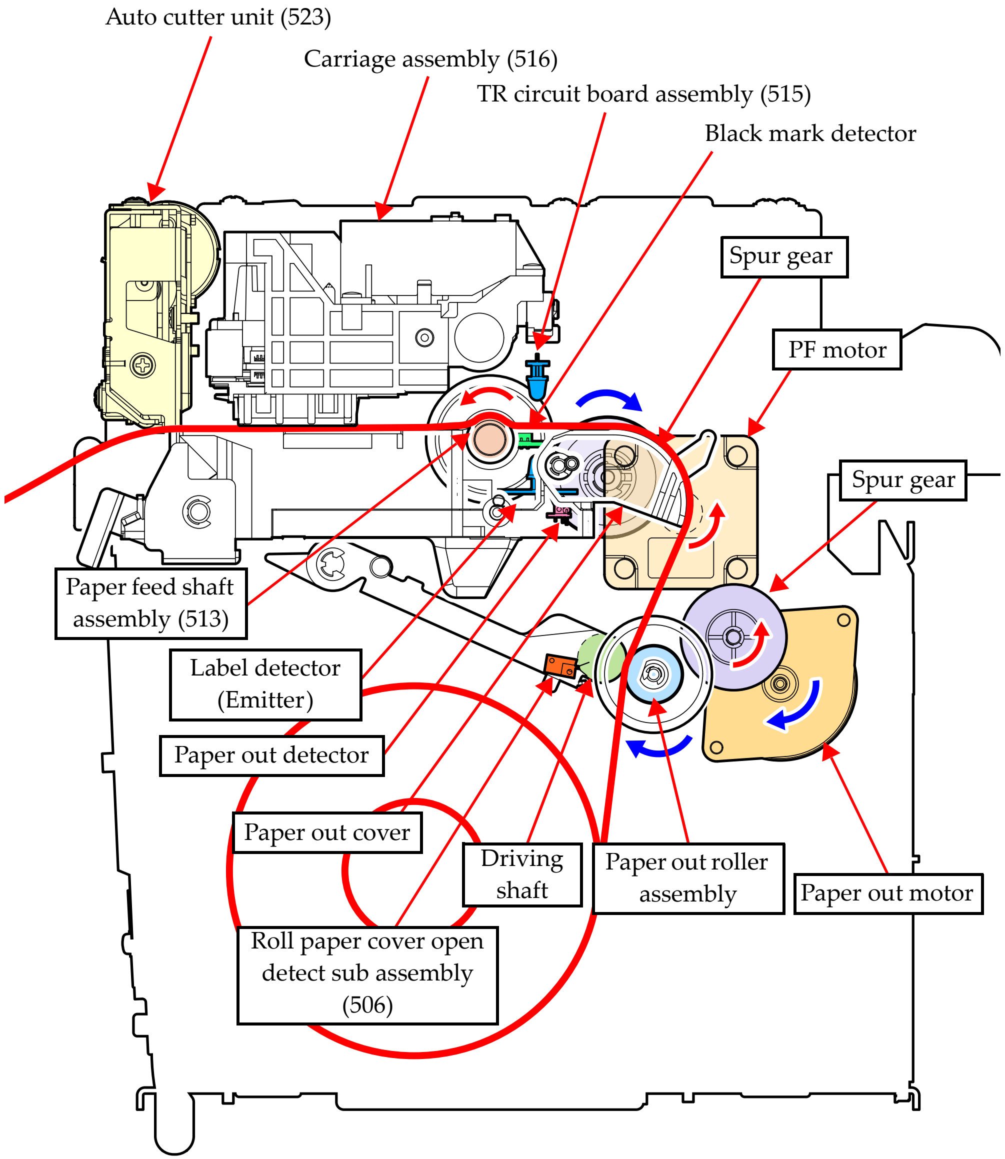

Auto cutter unit (523)
Carriage assembly (516)
TR circuit board assembly (515)
Black mark detector
Spur gear
PF motor
Spur gear
Paper feed shaft assembly (513)
Label detector (Emitter)
Paper out detector
Paper out cover
Driving shaft
Paper out roller assembly
Paper out motor
Roll paper cover open detect sub assembly (506)

**Figure 2-8. Paper Out/Paper Feed Path (Roll Paper)**

☐ Fan fold paper

1. If the F/F insert detector detects fanfold paper, the suction fan (507) starts the suction operation, and the PF motor starts rotating.
2. The fanfold paper is fed forward by the paper feed shaft assembly (513).
3. The TR circuit board assembly (515), label detector (Emitter), and black mark detector detect the fanfold paper. ("Detectors' output and judgment of paper presence" (p. 53))
4. The paper eject detector detects the fed fanfold paper.

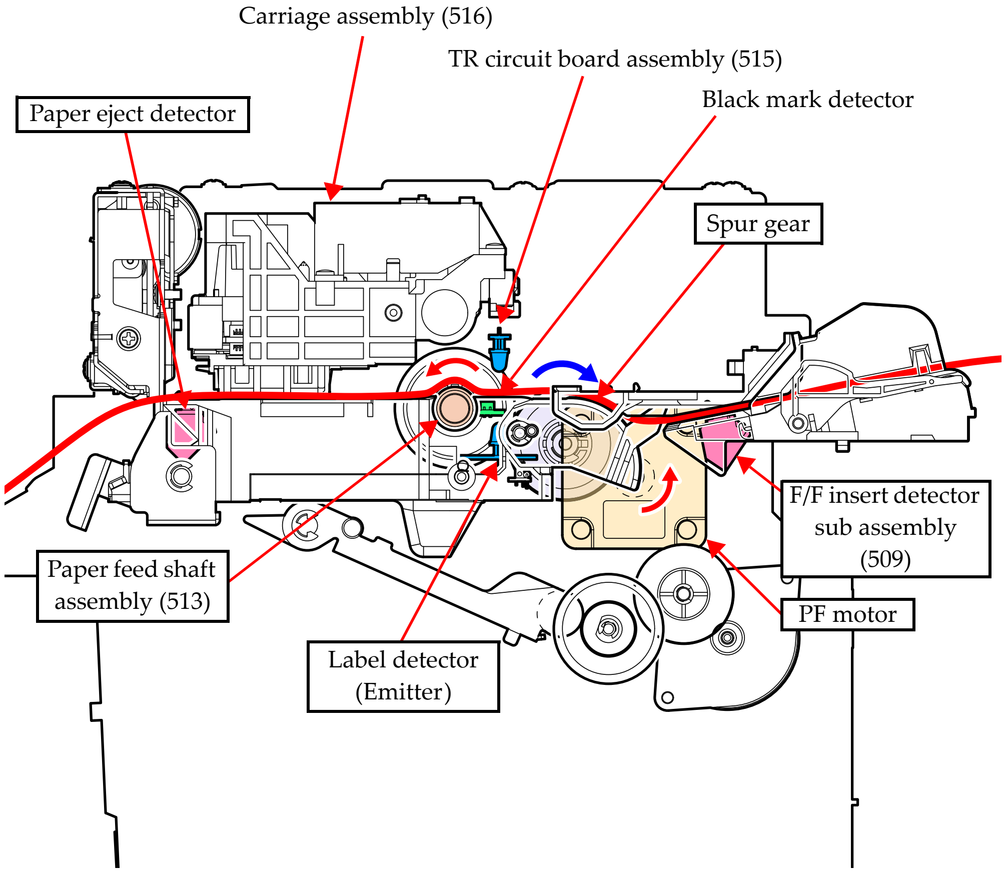

Carriage assembly (516)
TR circuit board assembly (515)
Black mark detector
Paper eject detector
Spur gear
F/F insert detector sub assembly (509)
PF motor
Paper feed shaft assembly (513)
Label detector (Emitter)

Figure 2-9. Paper Out/Paper Feed Path (Fanfold Paper)

## Motor and sensor specifications

☐ PF motor

| Item | Specification |
|---|---|
| **Type** | 2-phase 200-pole bipolar stepping motor |
| **Voltage** | 42 V (direct voltage) ± 5% |
| **Armature resistance** | 3.3 Ω ± 10% (detent point) |
| **Drive method** | Bipolar driving |
| **Driver** | BD64532EKV (ROHM Co., Ltd.) |

☐ Paper out motor

| Item | Specification |
|---|---|
| **Type** | 2-phase 48-pole bipolar stepping motor |
| **Voltage** | 42 V (direct voltage) ± 5% |
| **Armature resistance** | 7.4 Ω |
| **Drive method** | Bipolar driving |
| **Driver** | BD64532EKV (ROHM Co., Ltd.) |

☐ Label detector / TR circuit board assembly (515)

| Item | Specification |
|---|---|
| **Type** | Separate emitter/receiver type Transmissive photo interrupter<br>Emitter element: STANLEY AN304<br>Receiver element: STANLEY PS3322GP |
| **Voltage** | Emitter (Vak): 3.3VDC ± 5%<br>Receiver (Vce): 5VDC ± 5% |

### ■ Relationship between the position detection and threshold values

| Paper position detection | Label detector | Black mark detector |
|---|---|---|
| No position detection | Threshold value (H) | Threshold value (H) |
| Detects black marks of die-cut label paper | Threshold value (H) | Threshold value (H) |
| Detects black marks of continuous paper | Threshold value (H) | Threshold value (H) |
| Detects gaps between labels | Threshold value (L) | Threshold value (L) |

### ■ Detectors' output and judgment of paper presence

| Label detector | Black mark detector | Presence of paper |
|---|---|---|
| L | H | Paper present |
| H | L | No paper |
| H | H | Paper present |
| L | L | Paper present |

### ☐ Black mark detector

| Item | Specification |
|---|---|
| **Type** | Transmissive photo interrupter<br>(SHARP GP2S40J0000F) |
| **Voltage** | 3.3 V DC ± 5% |

### ■ Black mark detector interface

| Sensor status | Sensor mode | Black mark detector signal level |
|---|---|---|
| Paper present (white background) | Reflection detected | H |
| Black mark | No reflection | L |

### ☐ Paper out detector

| Item | | Specification |
|---|---|---|
| **Type** | | Transmissive photo interrupter<br>(SHARP GP1S097HCZ0F) |
| **Voltage** | | 3.3 VDC ± 5% |
| **Detected state** | **H** | 2.4 V or more |
| | **L** | 0.4V or less |

### ■ Paper out detector interface

| Sensor status | Sensor mode | Black mark detector signal level |
|---|---|---|
| Without any slack/<br>Paper out starts | Shaded | H |
| With slack/<br>Paper out stops | Transmissive | L |

### ☐ F/F insert detector sub assembly (509)

| Item | | Specification |
|---|---|---|
| **Type** | | Transmissive photo interrupter<br>(SHARP GP1S93HCZ0F) |
| **Voltage** | | 3.3 V DC ± 5% |
| **Detected state** | **H** | 2.4 V or more |
| | **L** | 0.4V or less |
| **Detected state** | **Paper present** | Transmissive: L |
| | **No paper** | Shaded: H |

☐ Paper eject detector

| Item | | Specification |
|---|---|---|
| **Type** | | Transmissive photo interrupter<br>(SHARP GP1S93HCZ0F) |
| **Voltage** | | 3.3 V DC ± 5% |
| **Detected state** | **H** | 2.4 V or more |
| | **L** | 0.4V or less |
| **Detected state** | **Paper present** | Transmissive: L |
| | **No paper** | Shaded: H |

☐ Roll paper cover open detect sub assembly

Detects open or close of the roll paper cover.

| Item | | Specification |
|---|---|---|
| **Type** | | Mechanical contact points<br>(SHINMEI ELECTRIC MLS-40AUS) |
| **Voltage** | | 3.3 V DC ± 5% |
| **Detected state** | **H** | 2.4 V or more |
| | **L** | 0.4 V or less |
| **Detected state** | **Cover is opened** | Open: H |
| | **Cover is closed** | Close: L |

## Ink Supply Mechanism

This printer is an off-carriage type printer whose ink cartridges are installed in the cartridge holder unit (546). The pressurized pump unit sends compressed air through the pressurized sensor unit to the cartridge holder unit (546), then the air is supplied to the four ink cartridges in the cartridge holder unit (546). The air pushes the ink packs in the ink cartridges, and the ink in there is supplied to the print head (528) through the supply duct unit (524) and the valve head assembly (501).

The wasted liquid of the IS pump unit (518) (Page 60) is discharged through the supply duct unit (524) into the maintenance box.

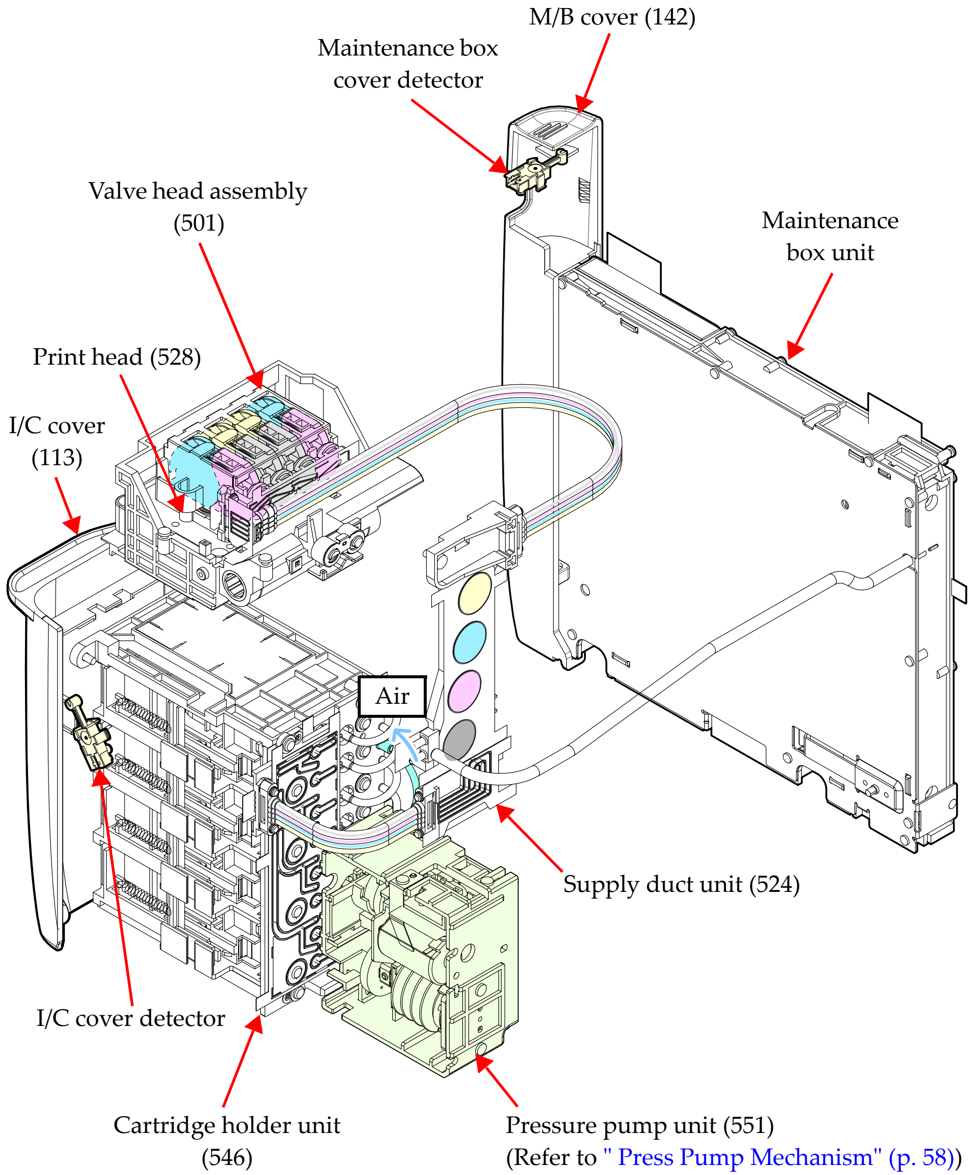

M/B cover (142)
Maintenance box cover detector
Valve head assembly (501)
Maintenance box unit
Print head (528)
I/C cover (113)
Air
Supply duct unit (524)
I/C cover detector
Cartridge holder unit (546)
Pressure pump unit (551)
(Refer to " Press Pump Mechanism" (p. 58))

Figure 2-10. Ink supply mechanism

## *Sensor specifications*

☐ I/C cover detector

Detects open or close of the I/C cover (113).

| Item | | Specification |
|---|---|---|
| **Type** | | Mechanical contact points<br>(SHINMEI ELECTRIC SSS-57-1) |
| **Voltage** | | 3.3 V DC ± 5% |
| **Detected state** | **H** | 2.4 V or more |
| | **L** | 0.4V or less |
| **Detected state** | **I/C cover open** | Close: L |
| | **I/C cover close** | Open: H |

☐ Maintenance box cover detector

Detects open or close of the M/B cover (142).

| Item | | Specification |
|---|---|---|
| **Type** | | Mechanical contact points<br>(SHINMEI ELECTRIC SSS-57-1) |
| **Voltage** | | 3.3 V DC ± 5% |
| **Detected state** | **H** | 2.4 V or more |
| | **L** | 0.4V or less |
| **Detected state** | **M/B cover open** | Close: L |
| | **M/B cover close** | Open: H |

## *Valve Mechanism*

The Valve head assembly (501) is equipped with a valve to prevent ink from flowing back (self-sealing valve).

Self-sealing valves work as a sub tank to compensate temporary ink supply shortage to keep the pressure constant in off-carriage type printers. For off-carriage type printers, some colors of ink tends to be excessively consumed temporarily, which may sometimes cause dot missing or similar trouble. Self-sealing valves help to prevent such situations and maintain the print quality.
When the ink in the valve head assembly (501) is supplied to the print head (528), the pressure in the pressure chamber declines and the pressure plate and diaphragm moves the valve rod to the valve chamber. Then the ink path from the ink tube and the valve head assembly (501) opens and ink is supplied to the pressure chamber. If the pressure chamber is filled with ink, the valve rod is moved to the valve chamber and closes the ink path from the ink tube.

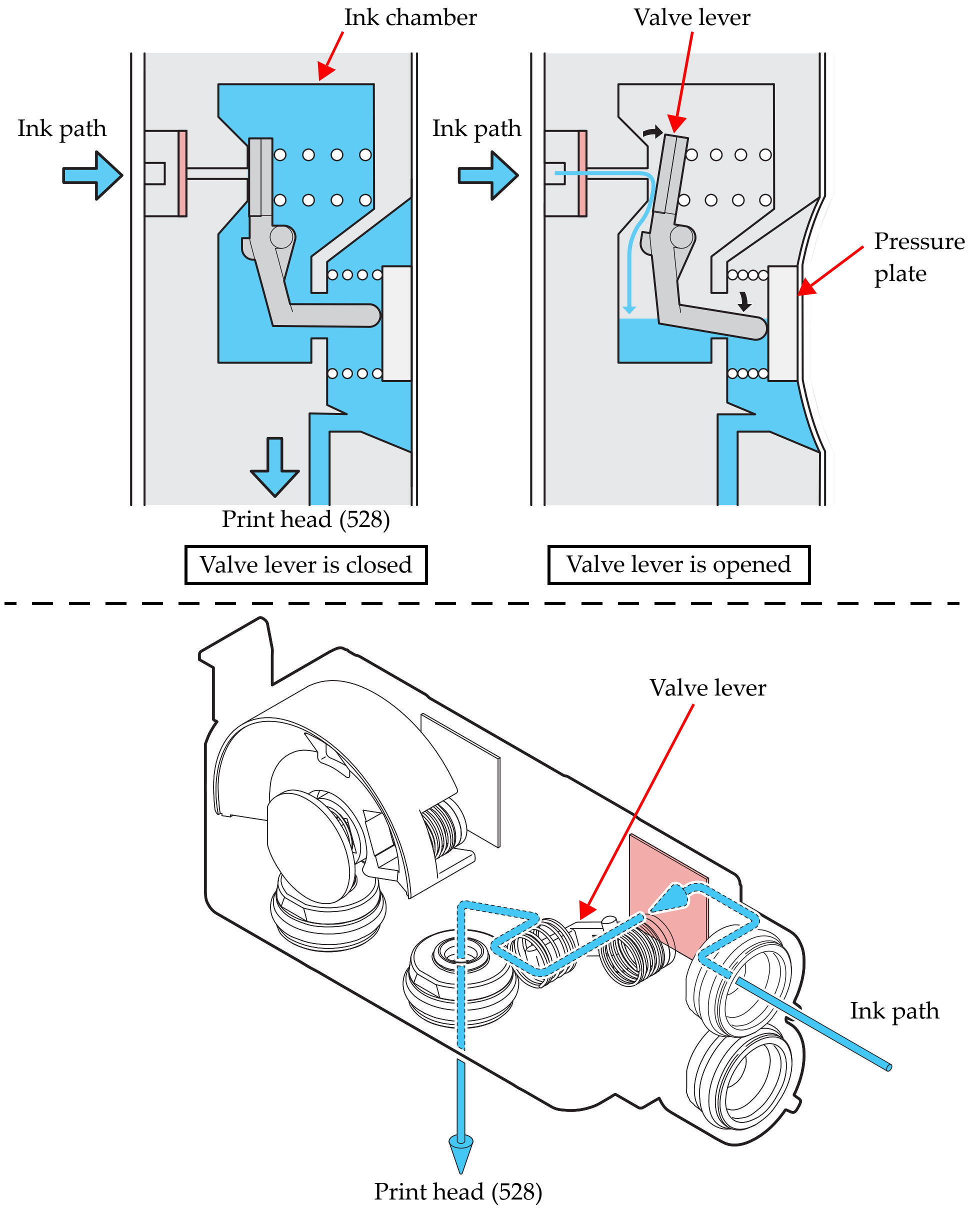

Ink chamber
Valve lever
Ink path
Ink path
Pressure plate
Print head (528)
Valve lever is closed
Valve lever is opened
Valve lever
Ink path
Print head (528)

**Figure 2-11. Valve mechanism (self-sealing valve mechanism)**

## *Press Pump Mechanism*

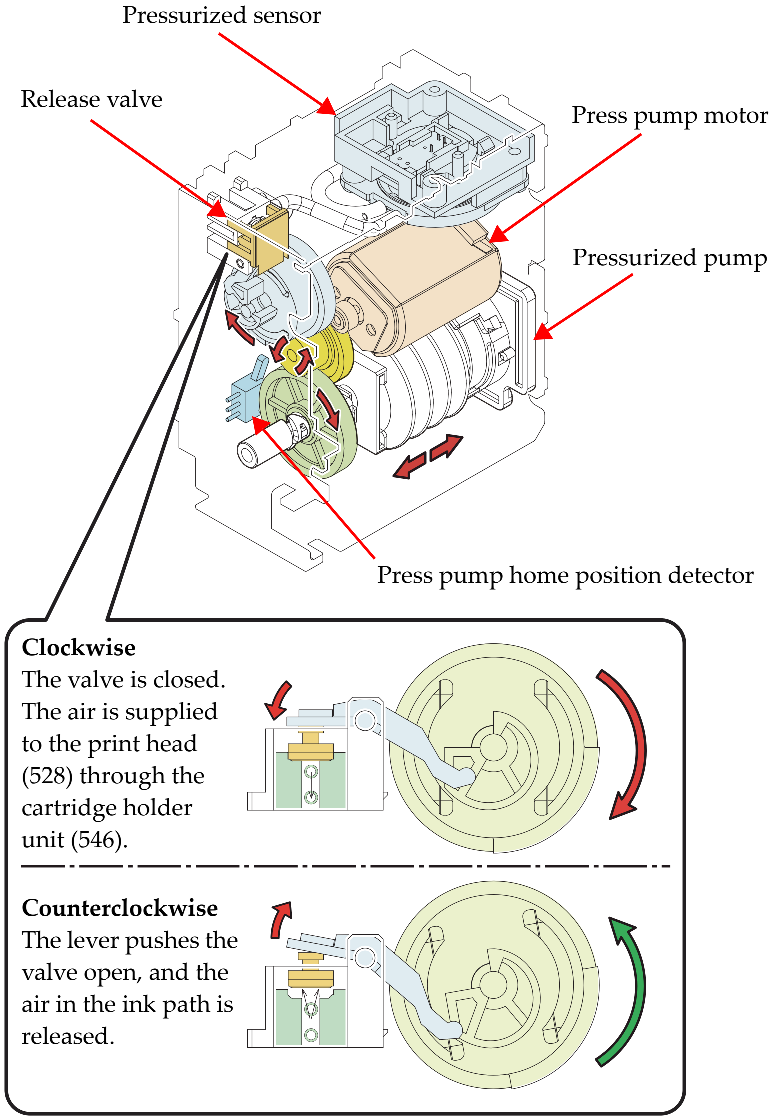
The press pump mechanism pressurizes the ink path to supply ink into the valve head assembly (501).

☐ Pressurizing sequence

1. The press pump motor rotates counterclockwise and turns the pressurized pump gears, and the air is sucked into the pressurized pump. (The air is continuously sucked until the press pump home position detector detects the extension of the pressurized pump.)
2. The press pump motor rotates clockwise and turns the pressurized pump gears in reverse, then the air in the pressurized pump is supplied via the pressurized sensor to the release valve.
3. When the clutch is rotated clockwise by the press pump motor, the release valve is closed and the air in the pressurized pump is delivered to the ink path.

☐ Depressurizing sequence

1. When the press pump motor rotates counterclockwise and turns the gear of the clutch, the release valve is opened by the lever and the air in the ink path is released.



**Clockwise**
The valve is closed. The air is supplied to the print head (528) through the cartridge holder unit (546).

**Counterclockwise**
The lever pushes the valve open, and the air in the ink path is released.

**Figure 2-12. Press pump mechanism**

The figure below shows the relationship between the pressure when the pressurized pump operates and the output of the press pump home position detector (detector 1) and press pump detector (detector 2).

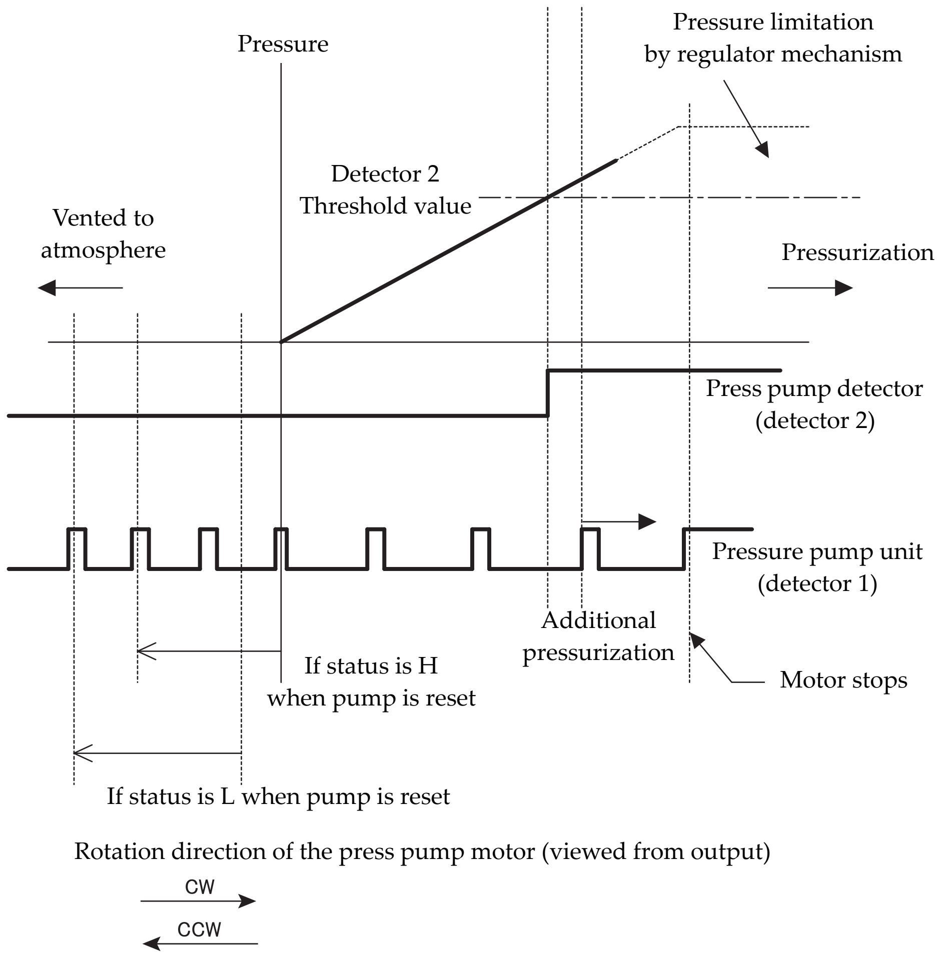

Pressure
Pressure limitation
by regulator mechanism
Detector 2
Threshold value
Vented to
atmosphere
Pressurization
Press pump detector
(detector 2)
Pressure pump unit
(detector 1)
Additional
pressurization
If status is H
when pump is reset
Motor stops
If status is L when pump is reset
Rotation direction of the press pump motor (viewed from output)
CW
CCW

**Figure 2-13. Relationship between the pressure and the output of detectors**

## *Motor and sensor specifications*

☐ Press pump motor

| Item | | Specification |
|---|---|---|
| **Type** | | DC motor with brush |
| **Voltage** | | 42 V (direct voltage) ± 5% (voltage applied to driver) |
| **Feature** | **Armature resistance** | 64.7 Ω ± 15% |
| | **Inductance** | 37.6 mH ± 25% |
| | **Rotor inertia** | 3.97 gcm$^2$ |
| **Drive method** | | PWM, constant-current chopping |
| **Driver** | | A6628 (Sanken company product) |

☐ Press pump detector

| Item | | Specification |
|---|---|---|
| **Type** | | Transmissive photo interrupter<br>(SHARP GP2S24C J000F) |
| **Voltage** | | 3.3 V DC ± 5% |
| **Detected state** | **Pressurization** | Transmissive: H |
| | **Nonpressurization** | Shaded: L |

☐ Press pump home position detector

| Item | | Specification |
|---|---|---|
| **Type** | | Mechanical contact points (OMRON D3C-2220) |
| **Voltage** | | 3.3 V DC ± 5% |
| **Detected state** | **In HP position** | Open: 0.4 V DC or less (L) |
| | **Out HP position** | Close: 2.4 V DC or more (H) |

## Ink System

The ink system consists of the mechanisms shown below.

### Pump mechanism

The pump unit is provided to absorb ink from the print head (528) or the cap unit. The pump unit is driven by the I/S pump motor.
The relationship between the I/S pump motor and the pump unit is shown below.

☐ Operation setting

| **Rotational direction of the I/S pump motor *** | **Pump unit operation** |
|---|---|
| CCW | Cap is open (down) |
| | Pump is released |
| | Wiper is set |
| | Carriage is unlocked |
| CW | Cap is close (up) |
| | Pump sucks the air and the wasted ink. |
| | Wiper is retracted |
| | Carriage is locked |

* : The rotational direction clockwise/counterclockwise is defined seen from the output shaft side.

### Cap mechanism

The cap unit is provided to keep the airtightness inside the cap by capping the surface of the print head (528) when the ink is absorbed by the pump unit. When the carriage assembly (516) moves to the absorbing position on the edge of HP side, the carriage causes the cap to slide so that the cap goes up and adhere to the print head (528).

### Cleaning mechanism

Also the cap unit contains the cleaning mechanism. It removes solidified ink, dust, and dirt near the nozzle (wiping). When the carriage is in the carriage lock position/wiping position, the carriage lock set/reset and wiper set/ reset operations are conducted by the driving force of the I/S pump motor.

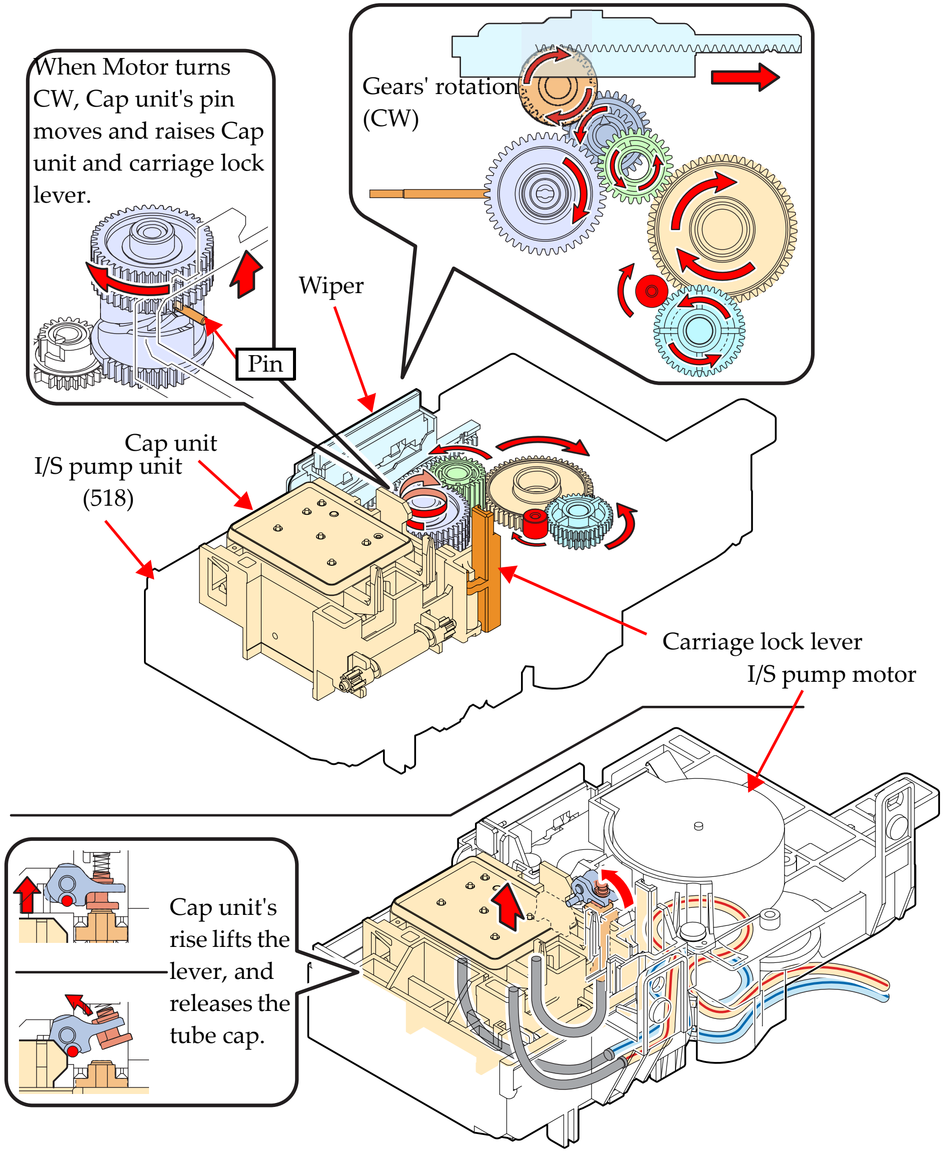

When Motor turns CW, Cap unit's pin moves and raises Cap unit and carriage lock lever.
Gears' rotation (CW)
Wiper
Pin
Cap unit
I/S pump unit (518)
Carriage lock lever
I/S pump motor
Cap unit's rise lifts the lever, and releases the tube cap.

**Figure 2-14. Ink system mechanism**

## *Motor specification*

☐ Pump motor

| **Item** | | **Specification** |
|---|---|---|
| **Type** | | 4-phase 48-pole PM stepping motor |
| **Voltage** | | 42 V (direct voltage) ± 5% (voltage applied to driver) |
| **Feature** | **Armature resistance** | 7.6 Ω ± 10%<br>(25 degrees C per phase) |
| | **Inductance** | 13.4 mH ± 20% (1 kH 1 Vrms) |
| **Drive method** | | Bipolar driving<br>2-2 phase, 1-2 phase, W1-2, 2W1-2, 4W1-2 phase constant-current driving |
| **Driver** | | 6628 (Sanken company product) |

- ■ Drive setting

| **Drive mode** | | **Revolution (rev/s)** | **Drive mode** | | **Revolution (rev/s)** |
|---|---|---|---|---|---|
| IS7 | Constant drive 2 | --- | IS4 | Normal speed | 2.2 |
| IS6 | Constant drive | --- | IS3 | High speed | 3 |
| IS5 | Low speed | 0.8 | IS2 | Ultrafast speed 1 | 5 |

## Auto Ink Detector (AID) Mechanism

AID is the mechanism that automatically detects missing dots of the print head (528) by nozzle and performs cleaning automatically if necessary. The mechanism creates the electric field between the nozzle plate and the grounded print head (528) by applying high voltage to the electric pole in the cap to electrically charge the ink drops shot from the nozzles. By detecting the electrical changes in the cap when the charged ink drops land in the cap. This mechanism enables the detection of dot missing in a unit of one nozzle.

When any missing dots are detected, the mechanism performs a cleaning appropriate for the detected number of missing dots automatically. If the dot missing persists even after the cleaning is done for the specified number of times, the warning message is displayed. The following is the timing when the AID mechanism detects the dot missing.

☐ When the printer is turned on

☐ On standby

☐ At the periodic check during continuous printing

☐ After the head cleaning

☐ When the roll paper cover is closed

☐ When the I/C cover is closed

☐ When the M/B cover is closed

This printer is equipped with the acceleration sensor board assembly (538). Therefore, if the sensor detects a shock of more than the specified level, the dot missing test is performed in the following situations.

☐ Before printing

☐ After printing

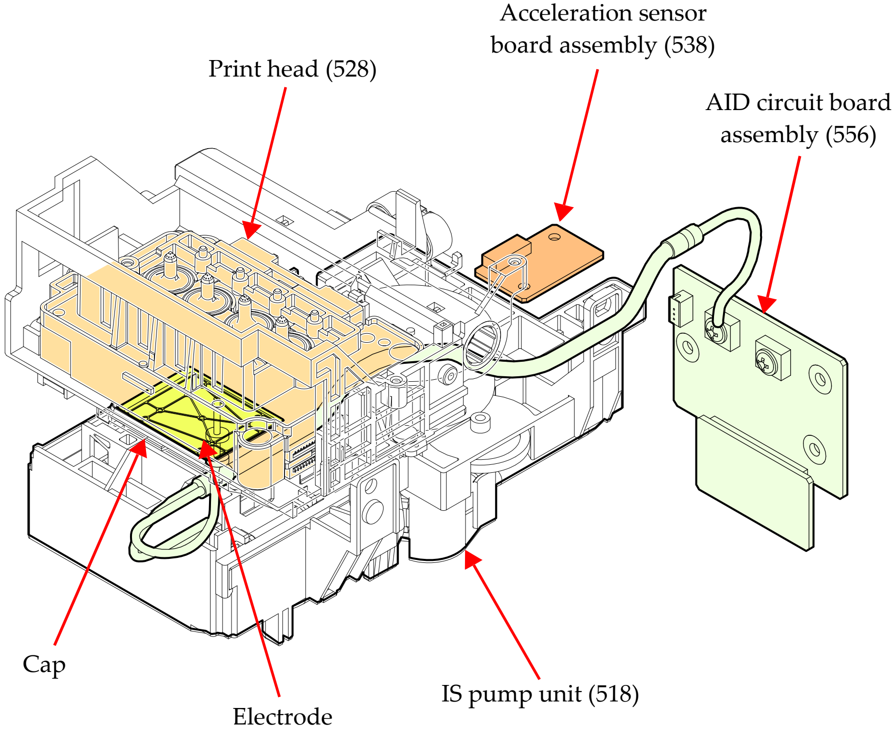

Acceleration sensor board assembly (538)
Print head (528)
AID circuit board assembly (556)
Cap
Electrode
IS pump unit (518)

**Figure 2-15. Auto Ink Detector (AID) Mechanism**

# Electrical Circuit Operating Principles

## Basic Specifications

The electric circuit of the TM-C3500 Series consists of the following boards.

☐ Main circuit board unit (201) : TM-C3500 MAIN

☐ Panel circuit board assembly (120) : TM-C3500 PANEL

☐ AID circuit board assembly (556) : TM-C3500 AID

## Circuit Board Components

| **Circuit board** | | **Explanation** |
|---|---|---|
| TM-C3500 MAIN | System | ☐ Logic circuit<br>☐ Interface circuit (USB2.0, 100BASE-TX/10BASE-T)<br>☐ Reset circuit |
| | Power supply | ☐ Low voltage circuit |
| | Printer | ☐ Motor control/drive circuit (CR, PF, PUMP, PRESS PUMP, PAPER OUT, CUTTER)<br>☐ Head control/drive circuit<br>☐ Sensor circuit (PW, CR encoder, I/C cover open detection, M/B cover open detection, Roll paper cover open detection, Paper out cover detection, Pressurized sensor, Pressurized pump detection, Head hot, F/F paper detection, Paper ejection, Label detection, Black mark ejection, Fixed blade detection) |
| TM-C3500 PANEL | | ☐ Switching circuit<br>☐ LEDs<br>☐ LCD display |
| TM-C3500 AID | | ☐ AID control |

# Connector Diagram

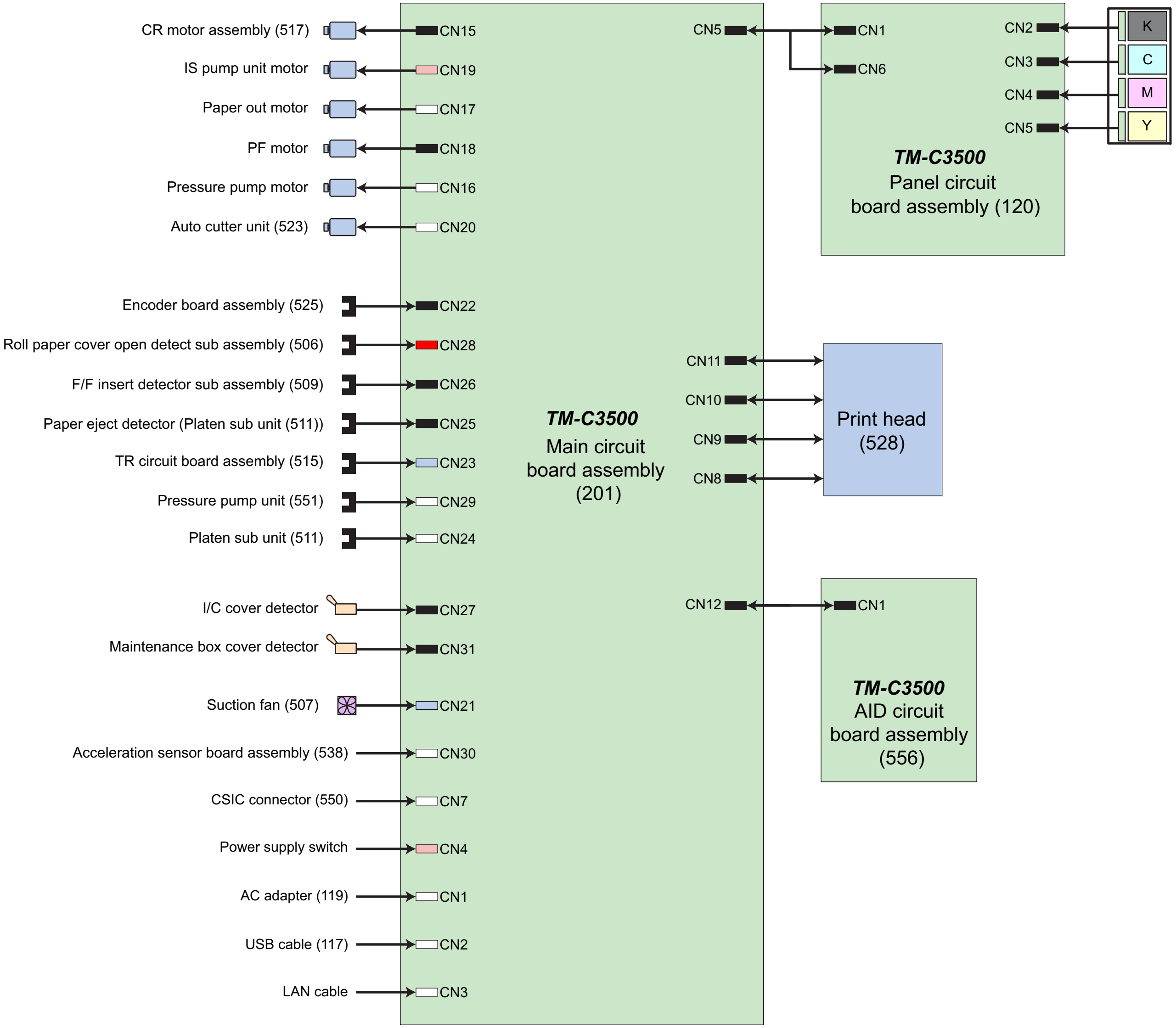

CR motor assembly (517)
CN15
IS pump unit motor
CN19
Paper out motor
CN17
PF motor
CN18
Pressure pump motor
CN16
Auto cutter unit (523)
CN20
Encoder board assembly (525)
CN22
Roll paper cover open detect sub assembly (506)
CN28
F/F insert detector sub assembly (509)
CN26
Paper eject detector (Platen sub unit (511))
CN25
TR circuit board assembly (515)
CN23
Pressure pump unit (551)
CN29
Platen sub unit (511)
CN24
I/C cover detector
CN27
Maintenance box cover detector
CN31
Suction fan (507)
CN21
Acceleration sensor board assembly (538)
CN30
CSIC connector (550)
CN7
Power supply switch
CN4
AC adapter (119)
CN1
USB cable (117)
CN2
LAN cable
CN3
TM-C3500
Main circuit
board assembly
(201)
CN5
CN11
CN10
CN9
CN8
CN12
CN1
CN6
CN2
CN3
CN4
CN5
K
C
M
Y
TM-C3500
Panel circuit
board assembly (120)
Print head
(528)
CN1
TM-C3500
AID circuit
board assembly
(556)

Figure 2-16. Connector diagram

# CHAPTER
# 3

# HANDLING

This chapter explains the handling and operation of the unit.

# Setup

**CAUTION**

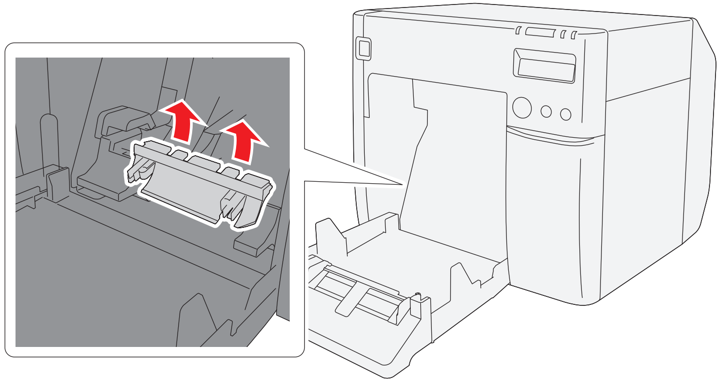
☐ Do not touch the plastic gears located on the front left of the printer, and do not apply excessive force when opening the roll paper cover.

☐ If vibration is applied to the printer, ink in the cartridges may be mixed temporarily, causing incorrect coloring. Therefore, if you transfer the printer after an ink charge, evaluate print colors through test printing. If print color is incorrect in the print result, run the head cleaning manually. (See page 255, " Print Head Cleaning.")

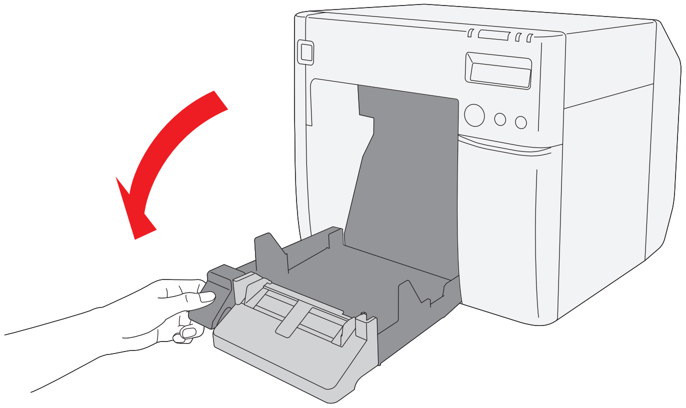
# Installing the Roll Paper

**CAUTION**

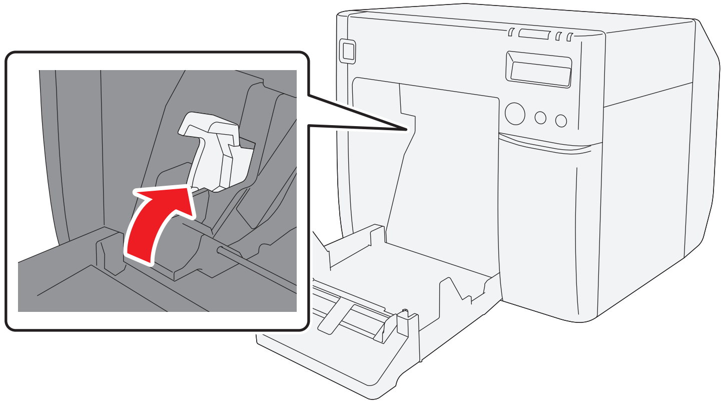
Remove the FF guide, if it is installed.



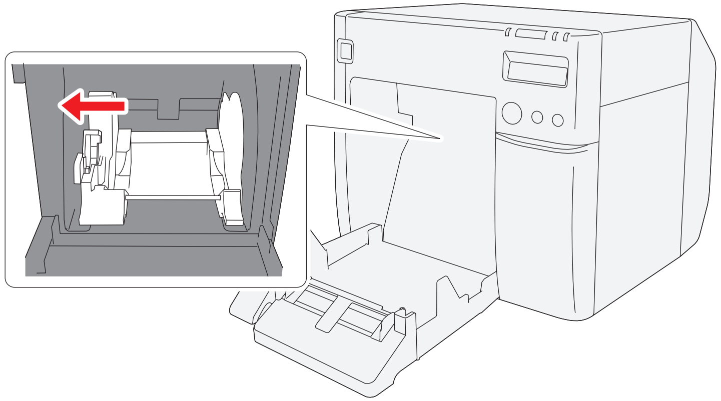
1. Open the roll paper cover while pulling the release lever toward you.



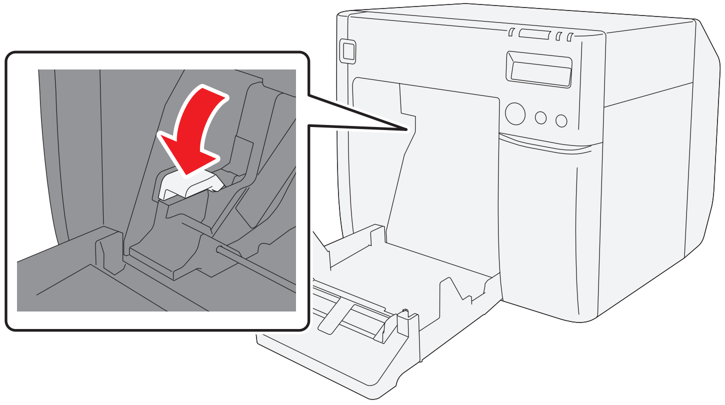
2. Unlock the roll paper guide.



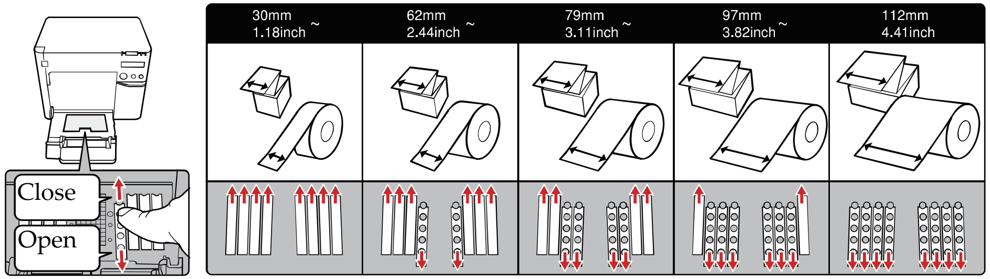
3. Move the left paper guide in the direction of the arrow shown in the figure below, and insert the roll paper all the way in, with the print surface facing upward.



4. Lock the roll paper guide.

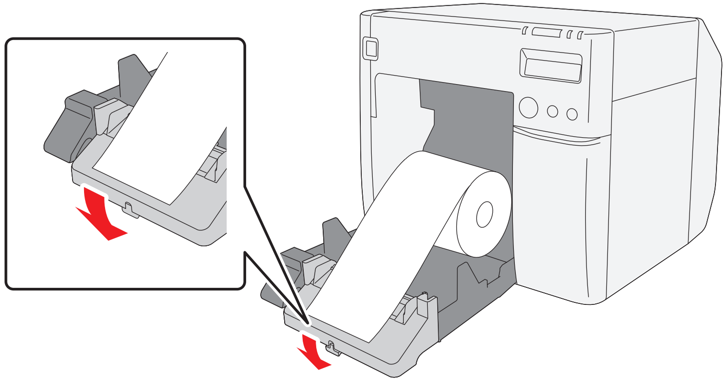


5. Open or close the shutters on the platen to match the width of the roll paper.

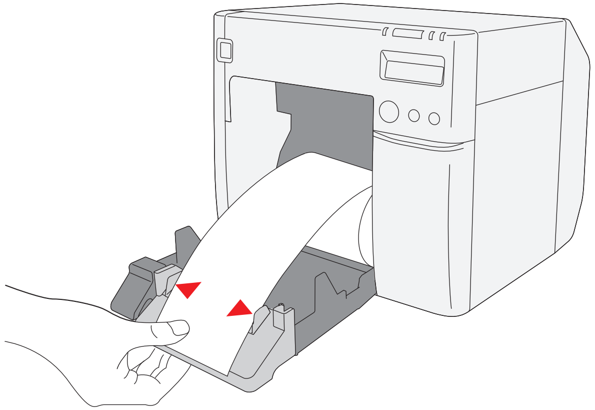


| Paper/backing width (mm) | Shutter open/close status |
|---|---|
| 30 mm {1.18″} or more, less than 62 mm {2.44″} | Close all shutters. |
| 62 mm {2.44″} or more, less than 79 mm {3.11″} | Open only the most inward shutters. |
| 79 mm {3.11″} or more, less than 97 mm {3.82″} | Open only the 2 most inward shutter rows. |
| 97 mm {3.82″}or more, less than 112 mm {4.41″} | Open only the 3 most inward shutter rows. |
| 112mm {4.41″} | Open all shutters. |

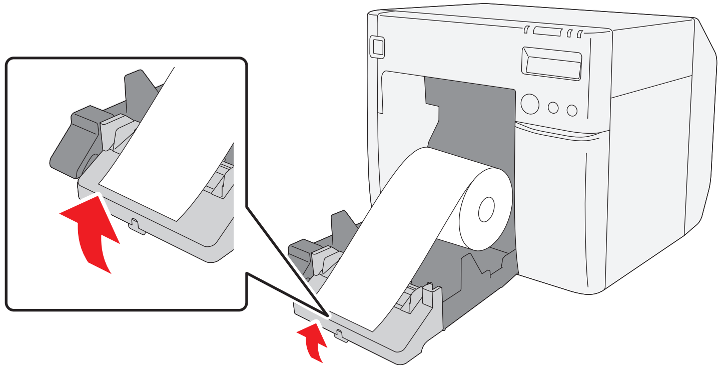
6. Release the lock of the paper ejection guide.



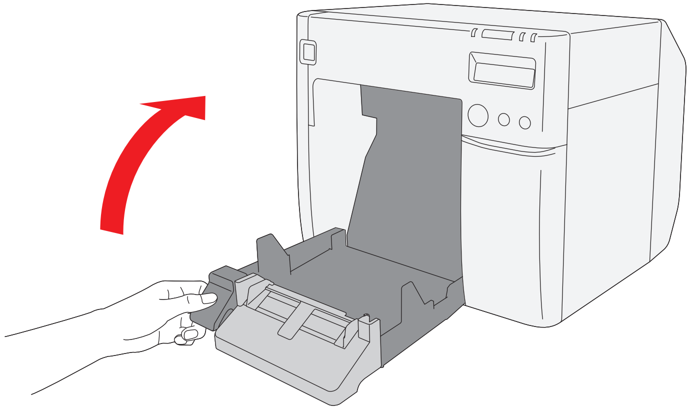
7. Adjust the paper ejection guide to the roll paper width.



8. Lock the paper ejection guide.

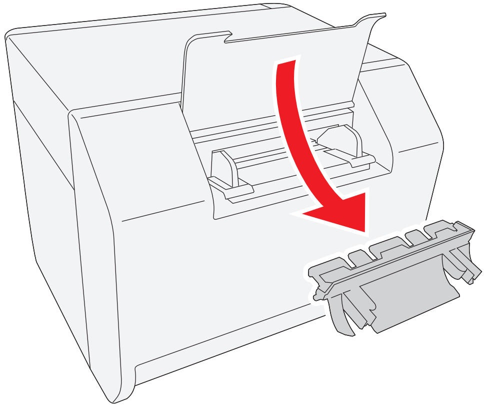


9. Close the roll paper cover.

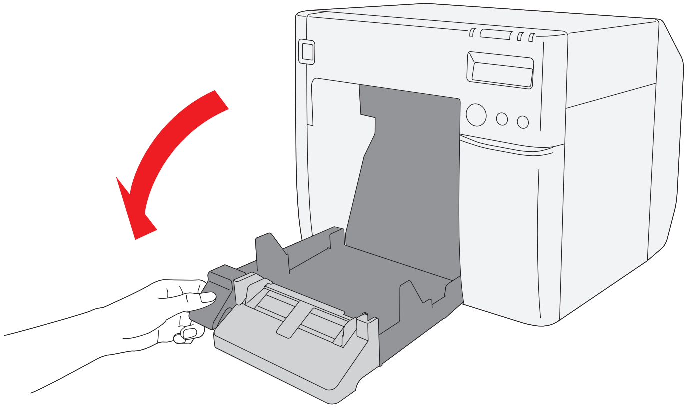


## *Installing Fanfold Paper*

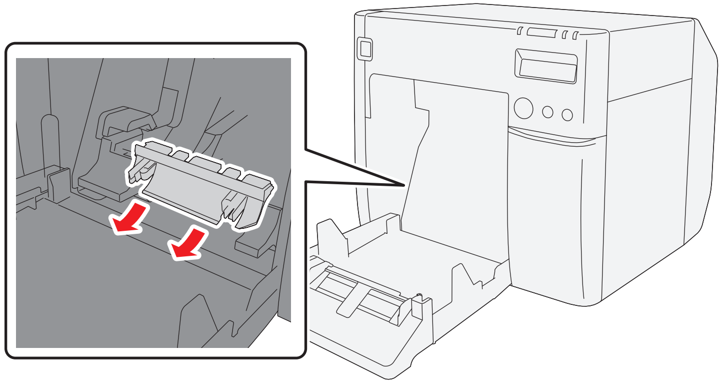
1. Open the F/F cover and take out the FF guide.



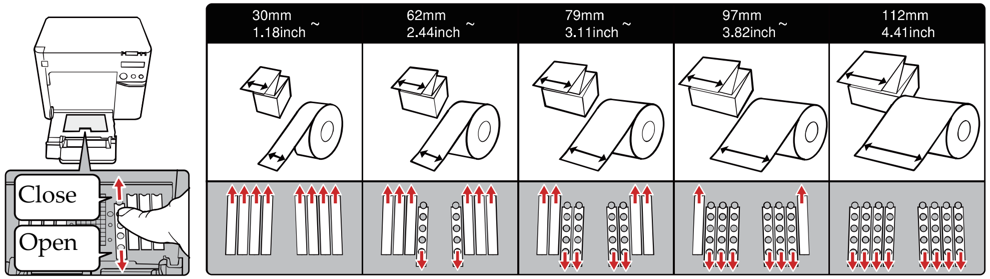
2. Open the roll paper cover while pulling the release lever toward you.



3. Insert the FF guide into the groove inside the roll paper cover to install it.

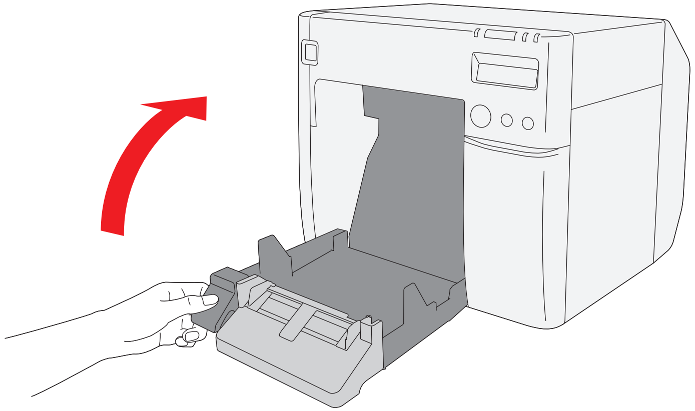


4. Open or close the shutters on the platen to match the width of the roll paper.

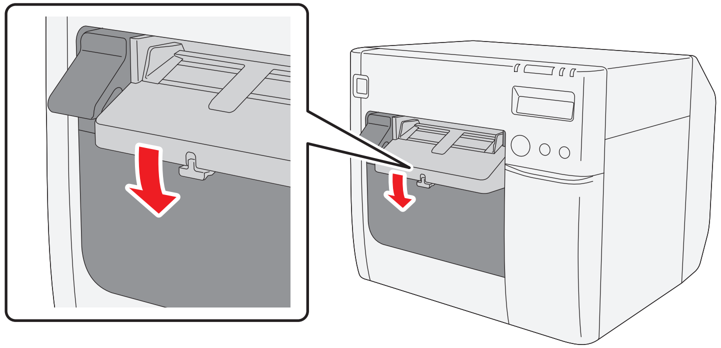


| Paper/backing width (mm) | Shutter open/close status |
|---|---|
| 30 mm {1.18"} or more, less than 62 mm {2.44"} | Close all shutters. |
| 62 mm {2.44"} or more, less than 79 mm {3.11"} | Open only the most inward shutters. |
| 79 mm {3.11"} or more, less than 97 mm {3.82"} | Open only the 2 most inward shutter rows. |
| 97 mm {3.82"}or more, less than 112 mm {4.41"} | Open only the 3 most inward shutter rows. |
| 112mm {4.41"} | Open all shutters. |

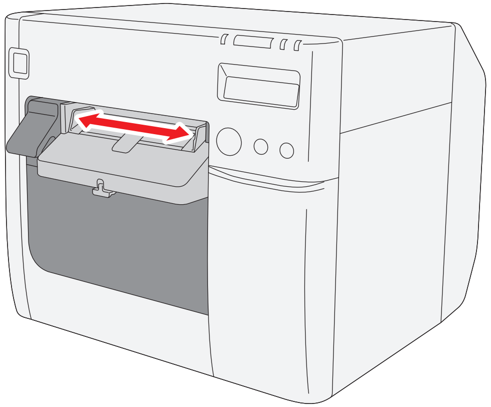
5. Close the roll paper cover.



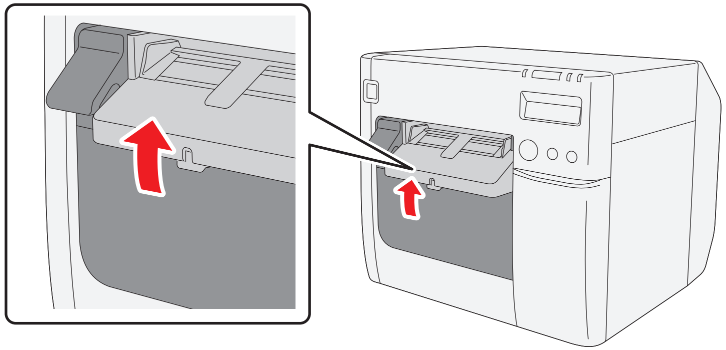
6. Release the lock of the paper ejection guide.



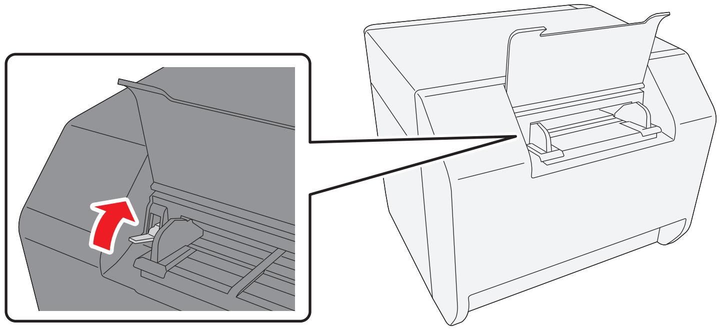
7. Slide open the paper ejection guide outward to the full.



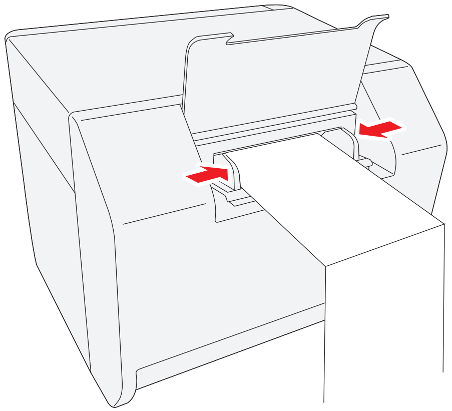
8. Lock the paper ejection guide.



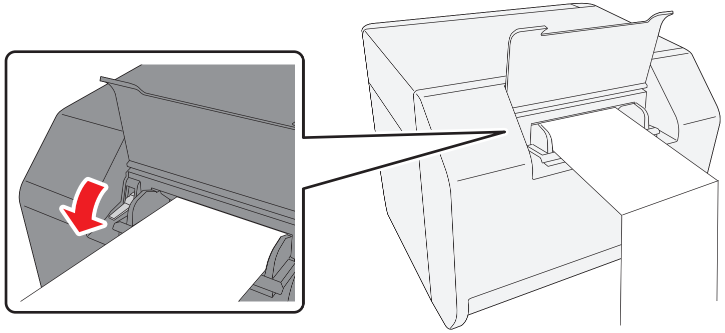
9. Open the F/F cover and release the lock for the fanfold paper guide.



10. Align the fanfold paper guide with the fanfold paper width.



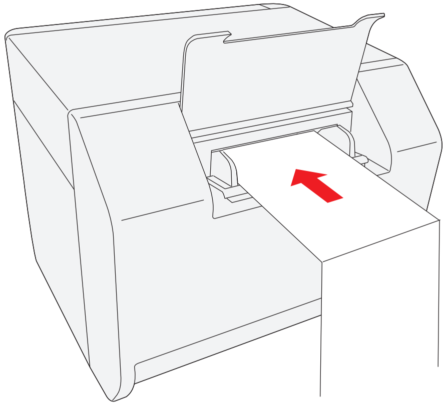
11. Lock the fanfold paper guide.



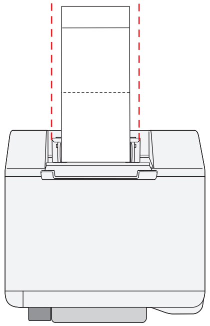
12. Turn the printer power on.

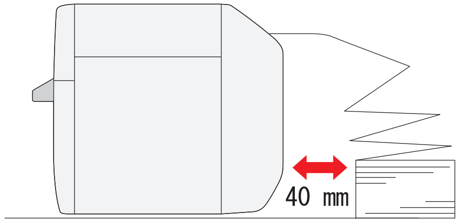
13. Make sure that the Power LED stops flashing and stays on.

14. Insert the fanfold paper into the paper slot with the print surface facing upward. Insert the paper until it is pulled into the printer (approximately 100 mm {3.94"}).

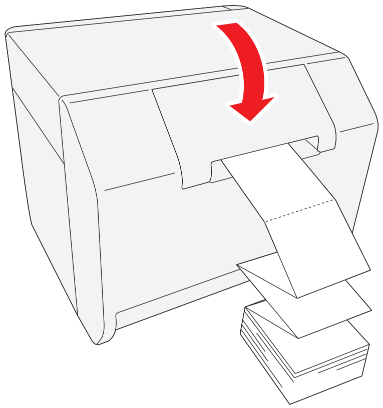


15. Place the stack of fanfold paper straight at least 40 mm {1.57"} away from the back of the printer.





16. Close the F/F cover.

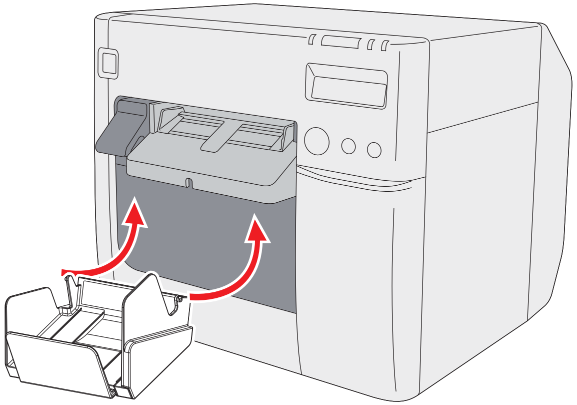


## *Installing the Paper Ejection Tray*

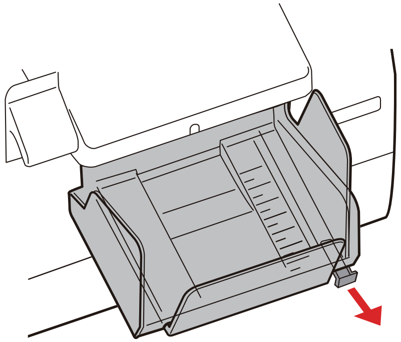
CAUTION

- ☐ Examine the type and the size of paper specified before installation. (See page 22, " Paper specifications.")
- ☐ Paper may not stay in the paper ejection tray depending on the paper curl and length.
- ☐ When roll paper is used, take out each sheet every time.
- ☐ When fanfold paper is used, a maximum of 100 pieces of paper can be stored in the ejection tray.

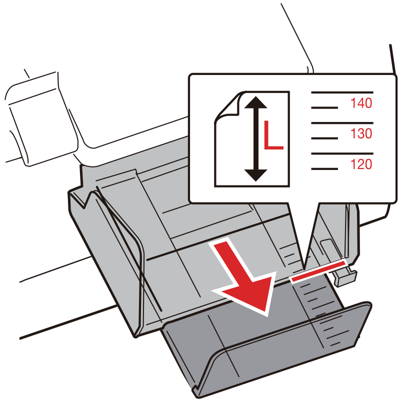
1. Attach the stacker to the paper ejection table by inserting the protrusions of the stacker into the joints under the paper ejection table.



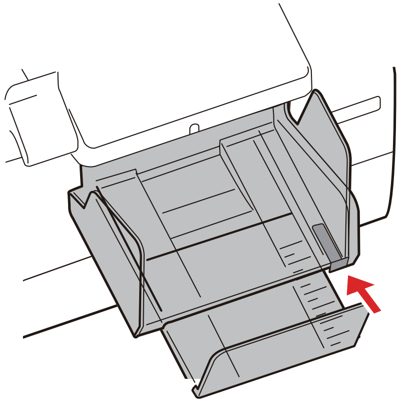
2. Lower the release lever on the right bottom of the paper ejection tray to unlock it.



3. Pull the end of the paper ejection tray out and adjust the position to the paper length.



4. Lock the paper ejection tray.



## Installing & Replacing the Ink Cartridge / Maintenance Box

**CAUTION**

- ☐ Keep ink cartridges / maintenance box out of the reach of children. Ink is harmful if swallowed.
- ☐ Do not disassemble or refill the ink cartridge / maintenance box. Spills can result, and tampering with the cartridge may cause a malfunction of the printer.
- ☐ Ink can permanently stain clothing.
- ☐ Do not strike the ink supply opening. Doing so may cause ink to leak from the cartridge / maintenance box.
- ☐ Once you begin using an ink cartridge / maintenance box, there will be a residue of ink around the ink supply opening. Avoid touching the ink supply opening, and be careful where you put the cartridge / maintenance box to avoid getting ink on your hands.
- ☐ Do not touch the green circuit board at the sides of the ink cartridge / maintenance box. Doing so may affect the normal operation of the ink cartridge.
- ☐ Ink cartridge holder, where the ink cartridge is stored, there is a needle which provides ink to the printer. There is ink on it. Do not insert your fingers, etc., because they will get dirty.
- ☐ Do not remove the ink cartridge / maintenance box from the printer, except when replacing it.
- ☐ Unnecessarily operating the ink cartridge cover/maintenance box cover, other than for replacements, will unnecessarily consume ink and may considerably reduce the printing life of the ink cartridge.
- ☐ After installing an ink cartridge, use it up within 6 months. Leaving the same cartridge in the printer for a long time may affect the normal operation of the ink cartridge.
- ☐ Use the ink cartridge by the date indicated on the box containing the ink cartridge and on the ink cartridge itself.
- ☐ The ink in the cartridge may freeze if stored at temperatures under 20°C {-4°F}, but once thawed at temperatures over 10°C {50°F}, it can be used normally.

**CAUTION**

- ☐ If water-repellent paper, such as art paper, is used for printing, the ink dries very slowly and the print may smear. In addition, if glossy paper is used for printing, touching the printed surface may leave finger marks and the ink may stick to your fingers. Select paper that does not cause this problem.
- ☐ Do not transport a partially used ink cartridge by itself. Doing so could result in leaking of ink.
- ☐ Do not subject the ink cartridge / maintenance box to strong shocks or vibration.
- ☐ Ink life differs, depending on the ways of printer handling and printing.
- ☐ Epson recommends the use of genuine Epson ink cartridges. Other products not manufactured by Epson may cause damage to your printer or adversely affect print quality. The printer may not be able to meet its standards.
- ☐ Be sure to use the specified ink cartridge (SJIC22P) / maintenance box (SJMB3500). Otherwise, ink may leak or printing may be affected.
- ☐ Do not apply benzene, paint thinner, toluene, or ketone-based solvents to the ink cartridge / maintenance box. These solvents may damage the plastic.
- ☐ Disposal of the ink cartridge/maintenance box must comply with all relevant national or local laws, ordinances, and regulations.

## Ink Cartridge / Maintenance Box Replacement Timing

When it is time to replace, the INK LED comes on. Replace the ink cartridge / maintenance box as soon as possible. The printer goes offline when the INK LED lights. Be sure to replace the ink cartridge / maintenance box.

## How to Install & Replace the Ink Cartridge

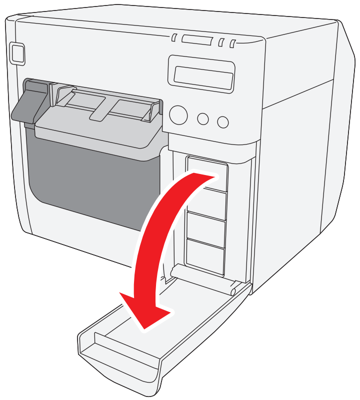
CAUTION

☐ For the ink cartridge, use SJIC22P.

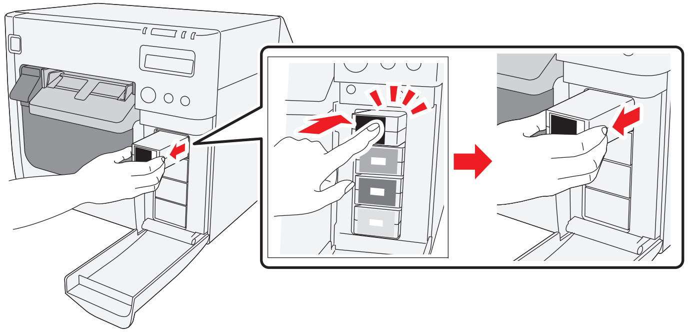
☐ Do not operate the ink cartridge cover except when replacing the ink cartridge. Doing so causes the printer to restart ink charging, resulting in waste of a substantial amount of ink.

☐ Do not leave the printer without an ink cartridge. Otherwise, the print head may dry and clog.

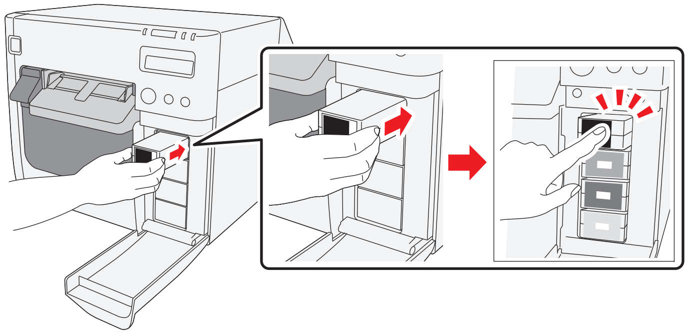
1. Turn the printer power on, and check that the INK LED on the printer is on.
2. Open the ink cartridge cover toward you.



3. Pull the used cartridge out toward you.



4. Shake the new ink cartridge package 3 or 4 times before opening it, and take the ink cartridge out of the package.
5. With the label facing upwards, insert the new ink cartridge, and push it in slowly until it clicks into place.



6. Close the ink cartridge cover.
7. The INK LED goes out.

## Ink Cartridge Life

Make sure of the following to keep the ink cartridge life long.

☐ Do not take off the ink cartridge unless you are replacing it.

☐ Do not turn the power on or off unless it is necessary.

☐ Do not execute cleaning unless printing is not clear.

## How to Handle the Used Ink Cartridge

Dispose of a used ink cartridge as an industrial waste. Disposal of the ink cartridge must comply with all relevant national or local laws, ordinances, and regulations.

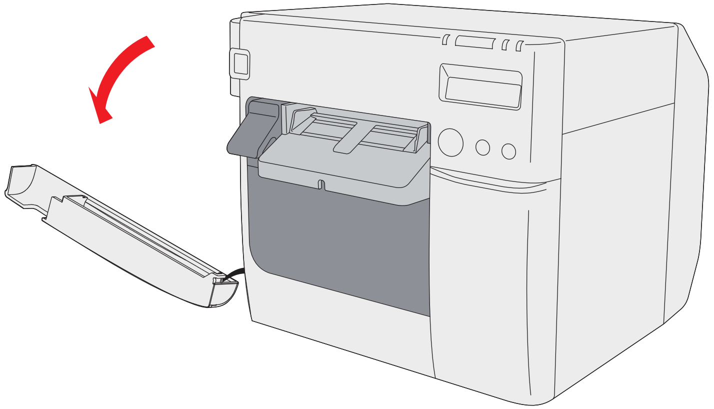
## *How to Install & Replace the Maintenance Box*

CAUTION

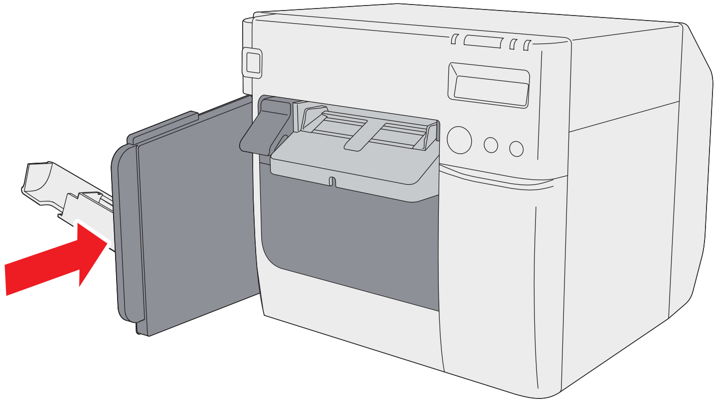
☐ For the maintenance box, use SJMB3500.

☐ Do not operate the maintenance box cover except when replacing the maintenance box. Doing so causes the printer to restart ink charging, resulting in waste of a substantial amount of ink.

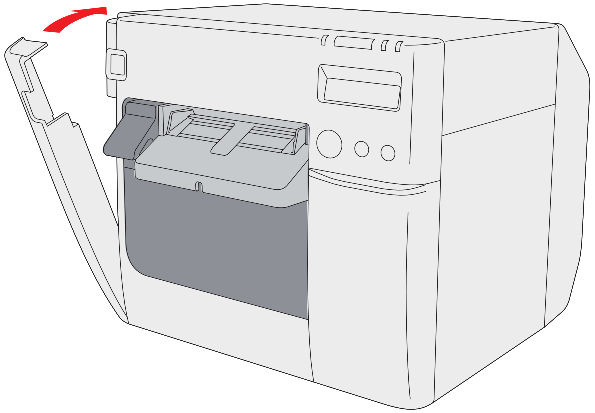
1. Turn the printer power on, and check that the INK LED on the printer is on.
2. Check that the maintenance box displays “REPLACE MAINT B” on the LCD.
3. Open the maintenance box cover towards you.



4. Pull out the used maintenance box towards you.



5. With the label of replacement facing right, slowly insert the new maintenance box.



6. Close the maintenance box cover.
7. The INK LED goes out.

## *How to Handle the Used Maintenance Box*

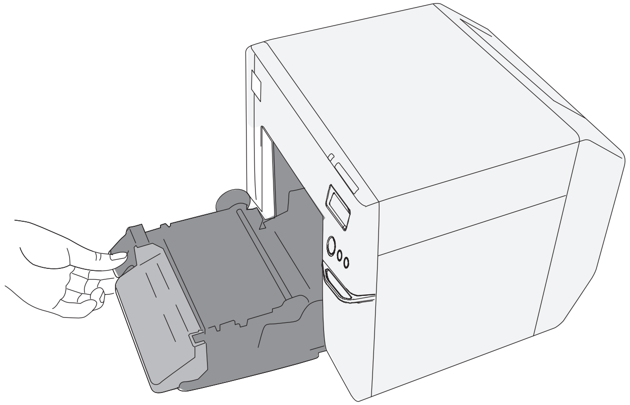
Dispose of a used maintenance box as an industrial waste. Disposal of the maintenance box must comply with all relevant national or local laws, ordinances, and regulations.

# Removing Jammed Paper

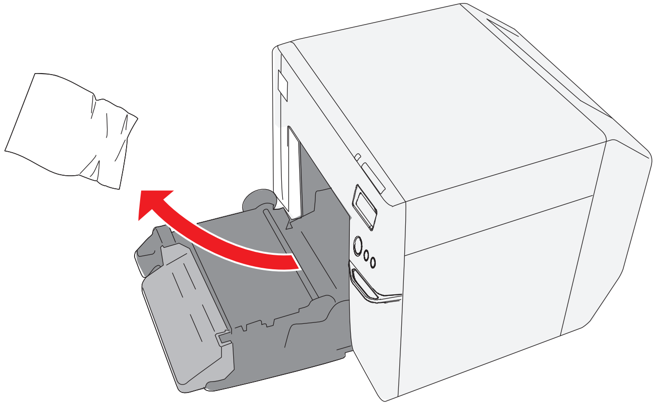
Follow the steps below to remove the jammed paper when a paper jam error occurs.

## For Roll Paper

1. Turn the printer power off.
2. Open the roll paper cover while pulling the release lever toward you.



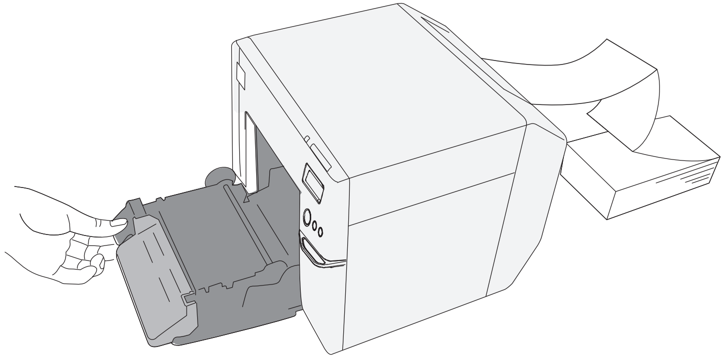
3. Remove the jammed paper.



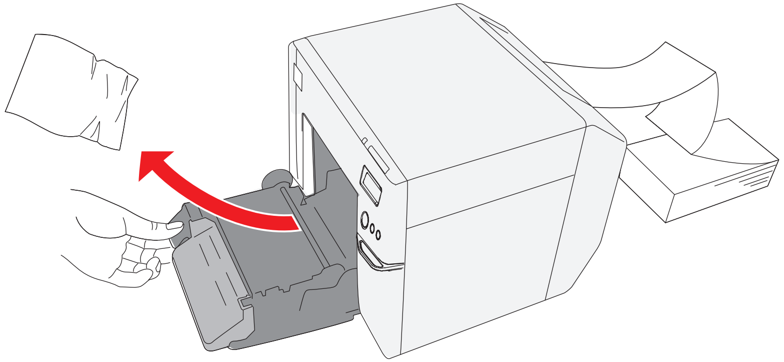
4. Load the paper. (See page 66.)

## For Fanfold Paper

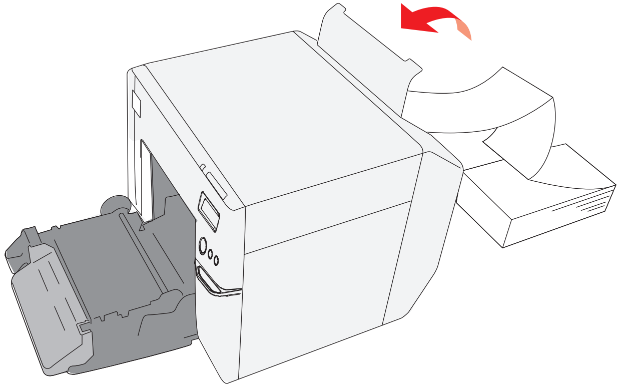
1. Turn the printer power off.
2. Open the roll paper cover while pulling the release lever toward you.



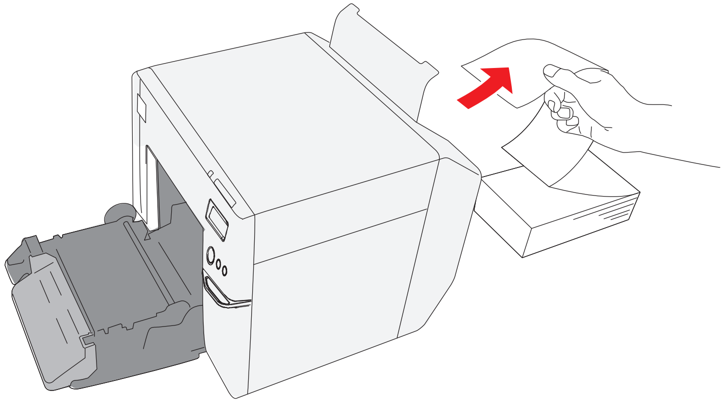
3. Remove the jammed paper.



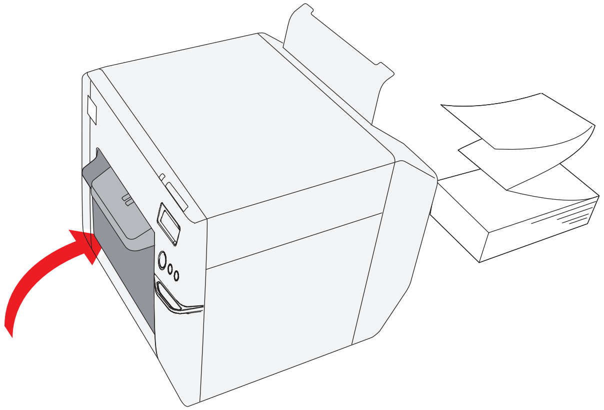
4. Open the fanfold paper cover.



5. Remove the fanfold paper.



6. Close the roll paper cover, and then reload the paper. (See page 69.)



# *Preparing for Transport*

Follow the steps in the six sections below to transport the printer.

CAUTION

- ☐ Do not take the ink cartridge / maintenance box out of the printer when transporting it.
- ☐ Turn off the printer with the printer POWER button and pack the printer in the carton box.
- ☐ Remove the roll paper in the printer, and do not turn the printer upside down or on its side when transporting it.

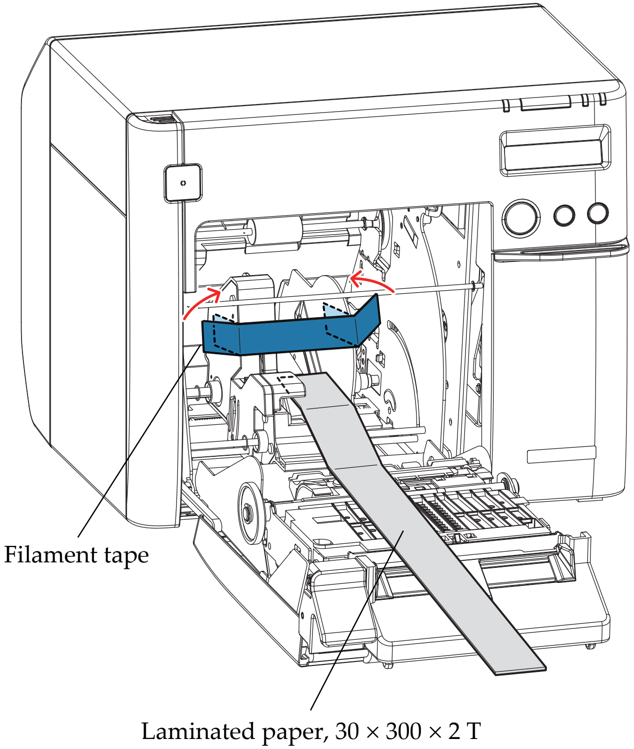
1. Preparing Shipping Supplies
2. Securing the Roll Paper Guide
3. Securing the Roll Paper Cover
4. Securing the Ink Cartridge Cover
5. Setting the Sheet
6. Covering with Laminated Paper
7. Packing by the Outer Packaging Assembly

## *Preparing Shipping Supplies*

| Part names | ASP | Quantity |
|---|---|---|
| LAMINATE SHEET,1MX1MX0.5T | Yes | 1 |
| Laminated paper, 30 × 300 × 2 T | Yes | 1 |
| Pad set, TMC3500 | Yes | 1 |
| Outer carton, TMC3500 | Yes | 1 |
| Sheet_** | Yes | 1 |
| Filament tape | No | --- |

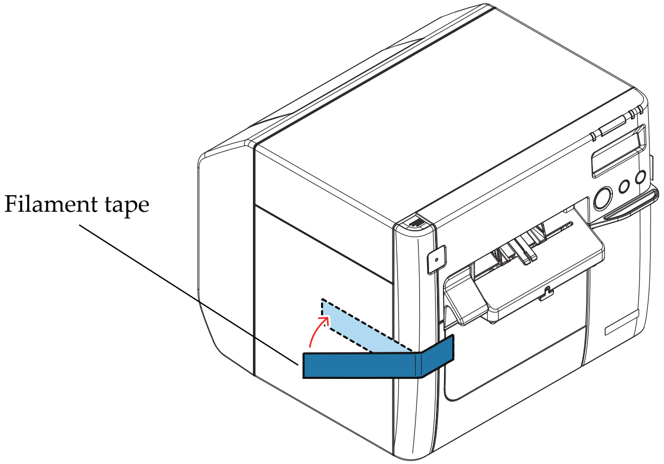
## *Securing the Roll Paper Guide*

1. Open the roll paper cover while pulling the release lever toward you.
2. Release the lock of the roll paper guide.
3. Move the roll paper guide inward till it cannot be moved, and secure it with the filament tape (100 mm {3.94"} × 19 mm {0.75"}).
4. Place the laminated paper, 30 × 300 × 2 T on the center of the roll paper guide, and close the roll paper cover.



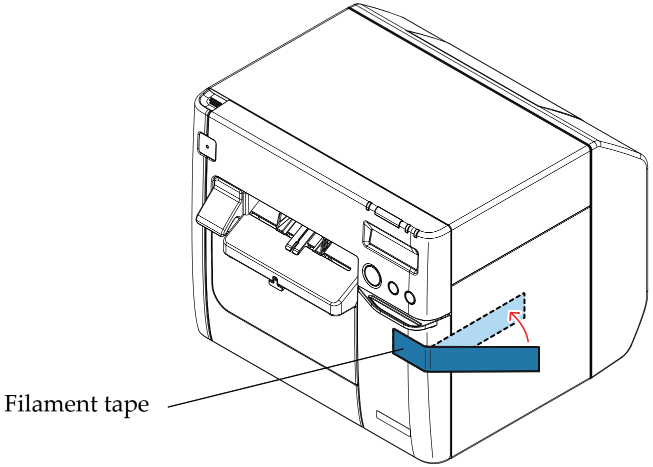
## Securing the Roll Paper Cover

Secure the roll paper cover and the left side of the printer with filament tape (100 mm {3.94"} × 19 mm {0.75"}).



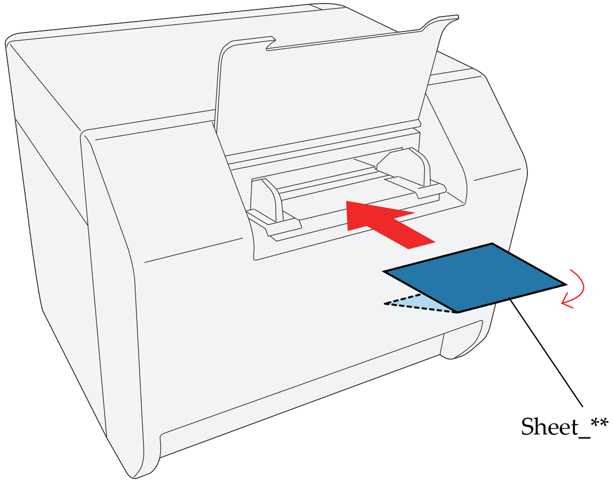
## Securing the Ink Cartridge Cover

Secure the ink cartridge cover and the right side of the printer with filament tape (100 mm {3.94"} × 19 mm {0.75"}).



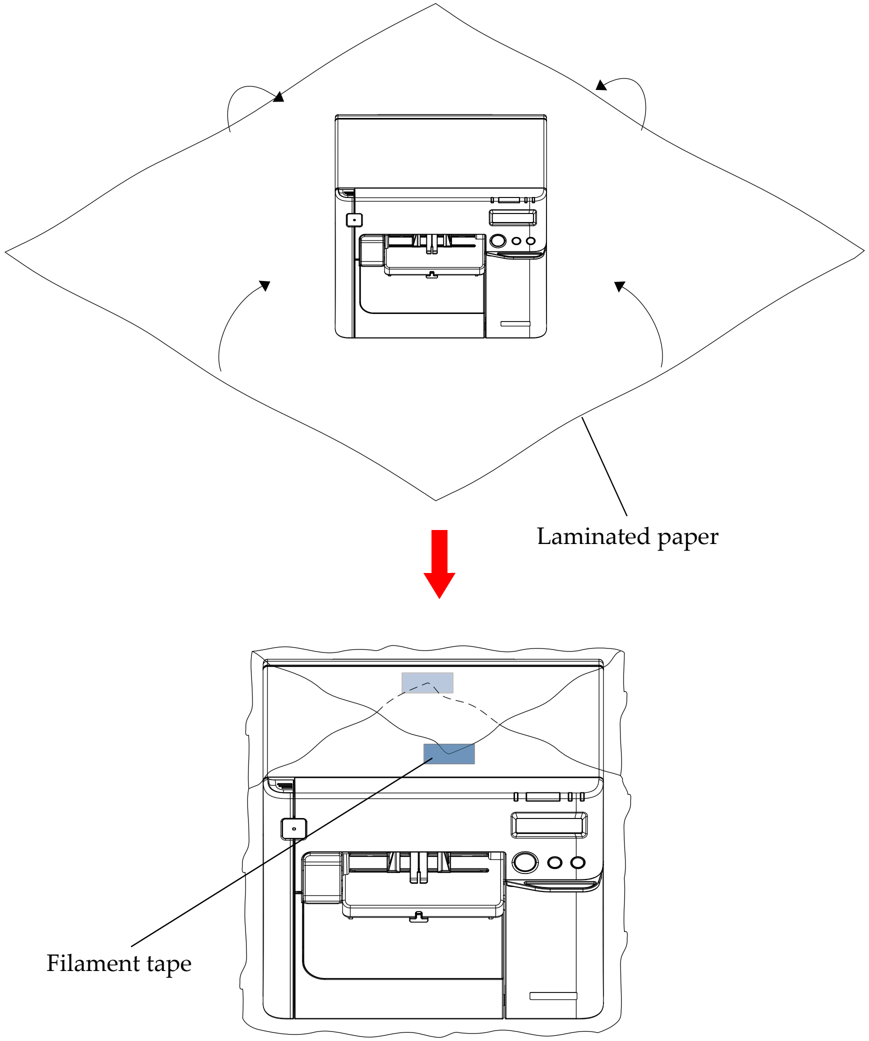
## Setting the Sheet

Fold the Sheet_** in halves and insert it into the F/F paper guide.



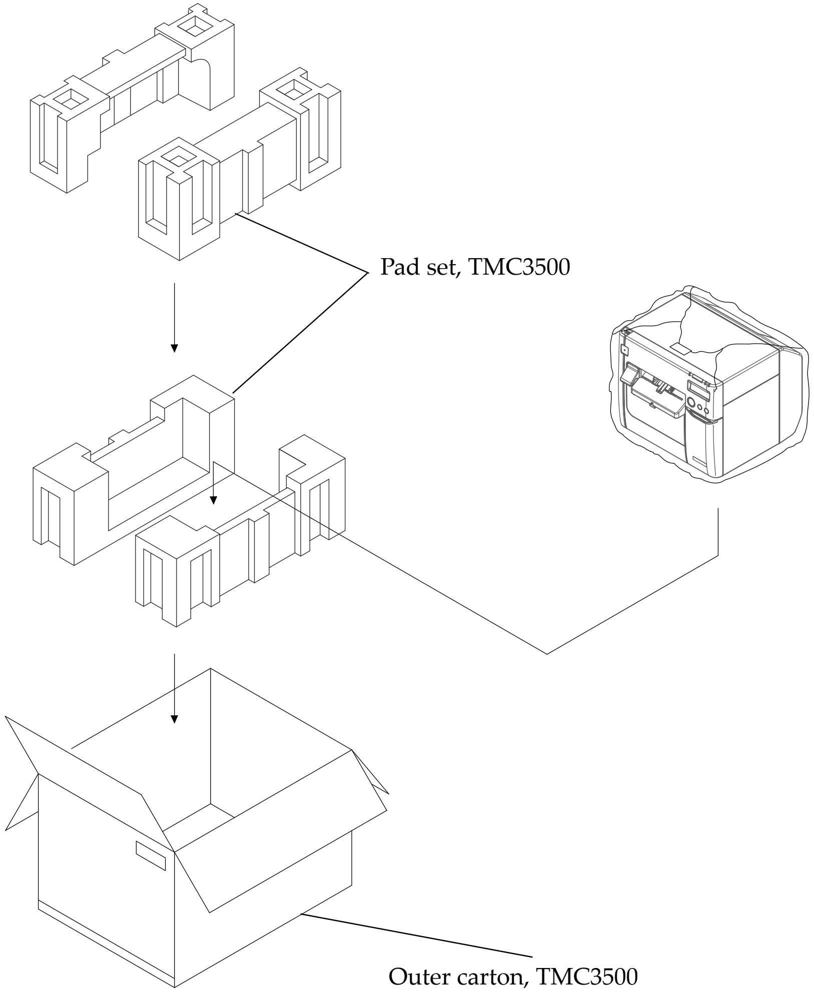
## Wrapping with Laminated Paper

1. Put the printer on the laminated paper.
2. Wrap the printer with the laminated paper, and secure it with filament tape (50 mm {1.97"} × 19 mm {0.75"}).


Laminated paper
Filament tape

## Packing with the Outer Packaging Assembly

1. Cover the printer with the pad set, TMC3500.
2. Place the printer with the bottom down and keep horizontal, and put it in the outer carton, TMC3500.


Pad set, TMC3500
Outer carton, TMC3500

# *Long-term Storage*

## *Before Long-term Storage*

Take the following precautions on storing the printer for an extended period of time after ink filling (after using the printer).

> **CAUTION**
>
> ☐ Make sure to store the printer with the ink cartridge installed in the printer.
>
> ☐ When moving the printer to storage, do not subject the printer to strong shocks or vibration. These may cause missing dots.

1. Run a self-test print.
2. Check that no dots are missing and no other printing problems have occurred.
   If any printing problems have occurred, run a print head cleaning (page 255) to recover the printer from the problem.

> **CAUTION**
>
> If missing dots have occurred, ink may become blocked in the print head, making it difficult for the printer to recover from the problem when the printer restarts.

3. After printing has completed, press the POWER button to turn off the printer.
4. Store the printer in a cool (0 to 25 °C {32 to 77 °F}) and dark place.

## *After Long-term Storage*

Take the following steps to restart the printer after long-term storage.

1. If the installed cartridge is in either of the following conditions, replace it with a new one.
   - 2 years have passed since its manufacturing date.
   - 6 months have passed since the cartridge was unpacked.

> **CAUTION**
>
> Do not turn the printer off or open the covers during the cleaning operation.

2. Turn the printer power on.
   When the printer is turned on, the automatic nozzle check system runs a check for missing dots, and then runs a cleaning automatically.
3. Run a self-test print (page 85) and check whether missing dots or any other printing problems have occurred. If a missing dot problem occurs, see page 255, " Print Head Cleaning" to execute head cleaning.

CHAPTER

4

# TROUBLESHOOTING

This manual explains how to repair and handle problems that may occur to the unit. Deal with any problems and perform repairs according to the repair processes described here.

# Repair Processes

## Repair Overview

Before performing any repairs, confirm the use environment (settings) of the product at the customer’s premises, and after the repairs are complete, restore the original settings; then ship the product. Before performing any repairs, first perform the preliminary check described below, and then carry out the troubleshooting. In actual repair work, follow page 84, " Repair Flow."

## Preliminary Check

Before starting your troubleshooting, always check the following items and actions.

- ☐ The power supply voltage is within the specified range. (Measure the voltage at the power outlet.)
- ☐ The power cord, the USB cable, and the LAN cable are not be damaged, short-circuited, broken, or internally miswired.
- ☐ The unit is correctly grounded.
- ☐ The unit is not installed in a location subject to high temperatures, high humidity, low temperatures, low humidity, or sudden changes in temperature.
- ☐ The unit is not installed in a location close to plumbing, a humidifier, a heater, a source of flame, a dusty location, or in the air flow from an air conditioner.
- ☐ The unit is not installed in a location subject to volatile gas or flammable gas.
- ☐ The unit is not installed in a location exposed to direct sunlight.
- ☐ The unit is installed in a stable, level location.
- ☐ No equipment that produces vibrations is placed directly on/under the unit.
- ☐ Use paper satisfying the standard specified on page 22, " Paper specifications."
- ☐ The unit has not been used in any way that conflicts with the supplied manual.
- ☐ Check the inside of the unit and remove dust, paper, or other foreign objects, if any.
- ☐ The computer in use satisfies the hardware requirements. See page 19, " Operating Environment."

## Repair Flow

Always follow the flowchart below to troubleshoot problems. When a problem is found, identify the cause of it based on the fault symptoms, and perform the required part replacement, adjustment, or lubrication, if necessary.

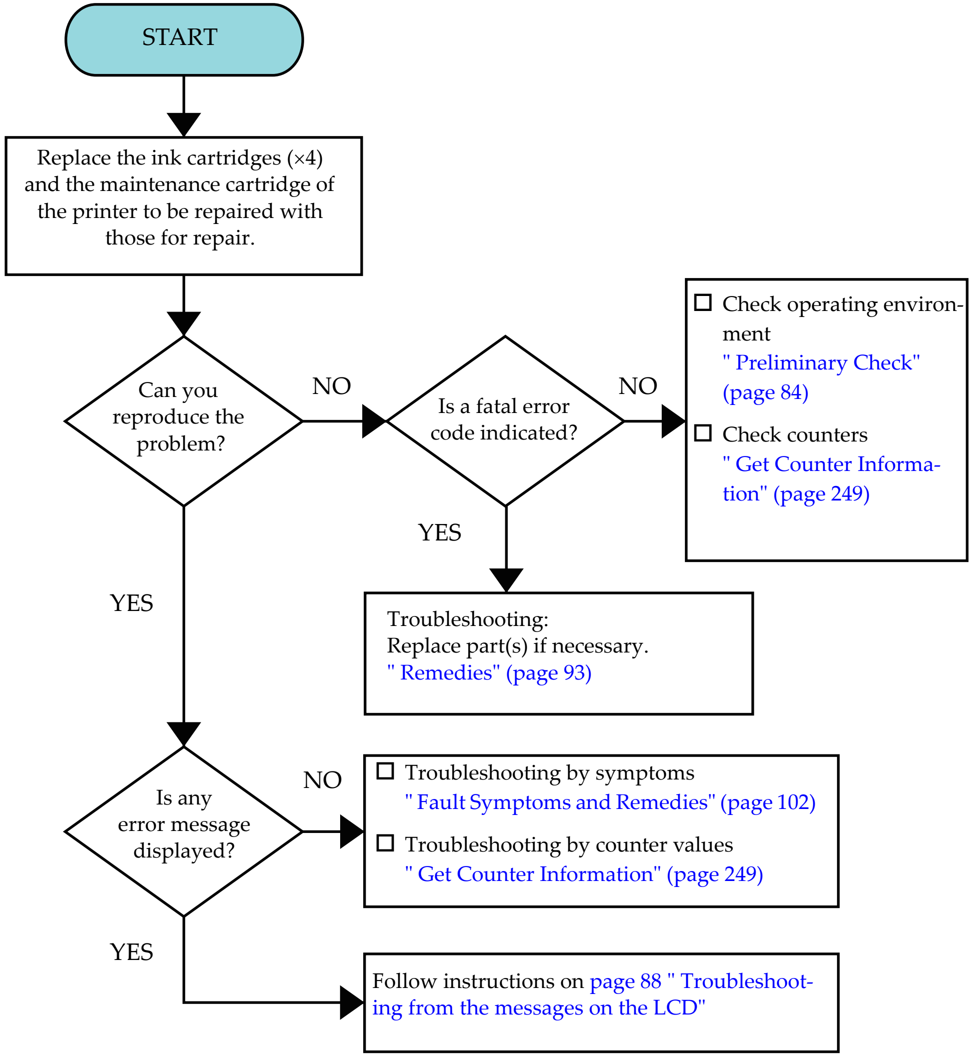

START
Replace the ink cartridges (×4) and the maintenance cartridge of the printer to be repaired with those for repair.
Can you reproduce the problem?
NO
Is a fatal error code indicated?
NO
☐ Check operating environment
" Preliminary Check" (page 84)
☐ Check counters
" Get Counter Information" (page 249)
YES
Troubleshooting: Replace part(s) if necessary.
" Remedies" (page 93)
YES
Is any error message displayed?
NO
☐ Troubleshooting by symptoms
" Fault Symptoms and Remedies" (page 102)
☐ Troubleshooting by counter values
" Get Counter Information" (page 249)
YES
Follow instructions on page 88 " Troubleshooting from the messages on the LCD"

**Figure 4-1. Repair flow**

## Printing the Self-test

To print the self-test, turn the printer on while pressing the paper FEED button with the paper set in the roll paper unit. You can check print failures, such as a missing dot, using this result.

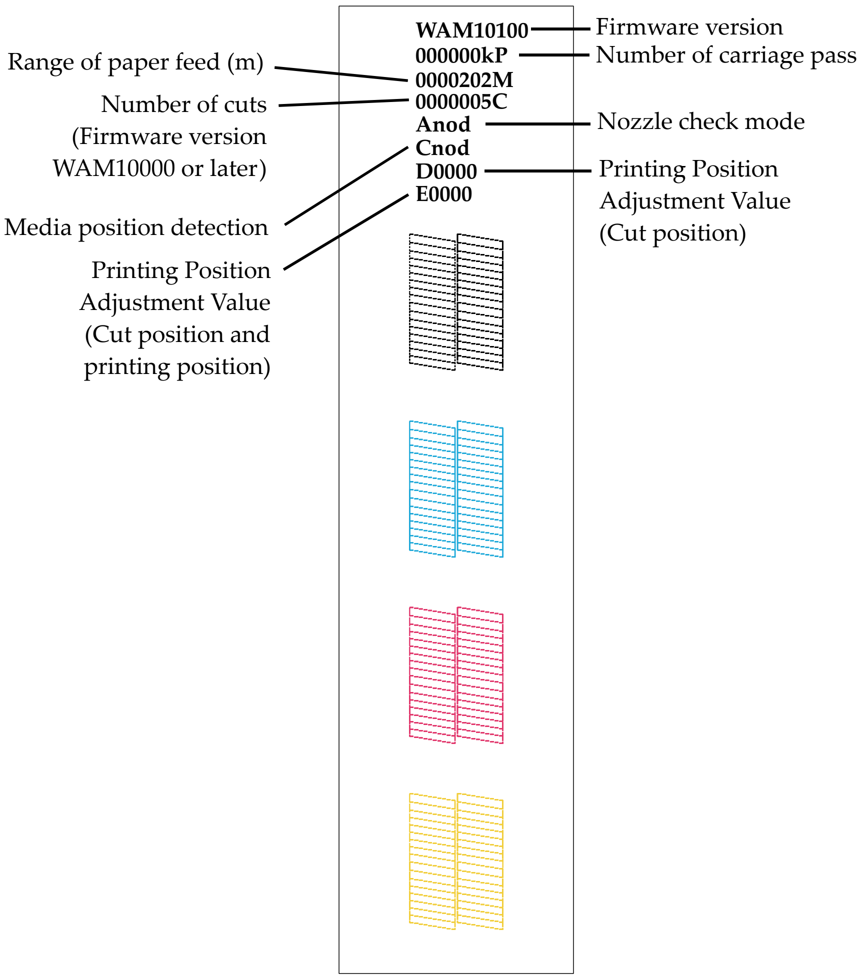

WAM10100
Firmware version
000000kP
Number of carriage pass
Range of paper feed (m)
0000202M
Number of cuts (Firmware version WAM10000 or later)
0000005C
Anod
Nozzle check mode
Cnod
D0000
Printing Position Adjustment Value (Cut position)
E0000
Media position detection
Printing Position Adjustment Value (Cut position and printing position)

**Figure 4-2. Printing of a self-test**

The printer setting information is as follows.

| Mode | Item | Description |
|---|---|---|
| Nozzle check mode | Aamd | Anti-missing Dot Mode |
| | Aamr | Anti-missing Read Mode |
| | Aamc | Anti-missing Color Mode |
| | Anod | No Missing Dot Detection Mode |
| Media position detection | Cnod | Full-page label/Continuous paper/Transparent full-page label |
| | Cbmd | Die-cut Label (BM) |
| | Cbmc | Black mark continuous paper |
| | Cgap | Die-cut label (Gap)/Transparent die-cut label |
| Printing Position Adjustment Value Hexadecimal [decimal] | Auto cut position | Dff00 [-256] - D0000 [0] - D00fe [+254] [*1] |
| | Auto cut/print start position | Eff00 [-256] - E0000 [0] - E00fe [+254] [*1] |

*1: The unit is by 1/720".

*2: The driver's position adjustment range is, in 1/180 inch units, -63 (-8.89 mm) to 0 to +63 (+8.89 mm).

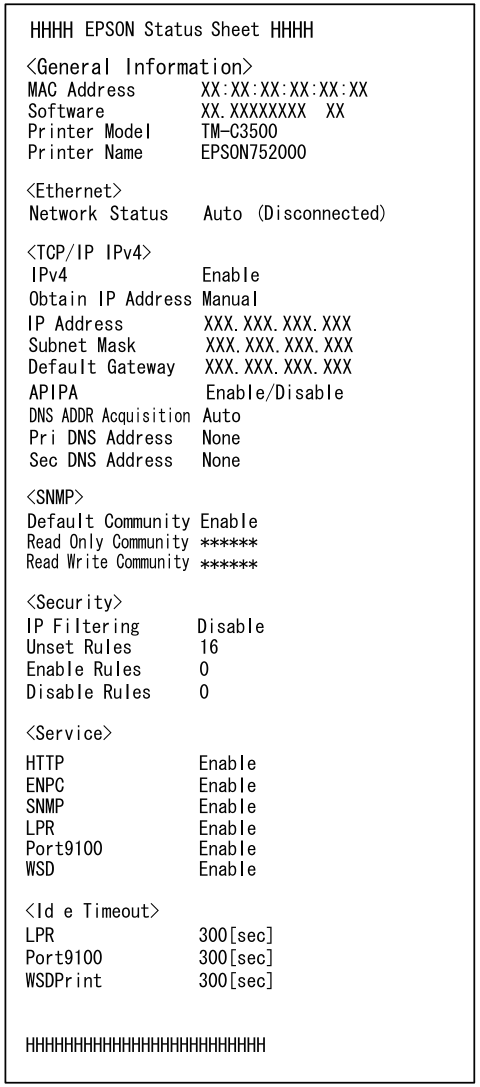
Check

If any of the following errors occurs while printing the self-test, reprint after error recovery is not performed:

- Roll paper cover open
- Paper out error
- Paper jam error

# Printing a Status Sheet

To print a status sheet, press the STATUS SHEET button on the rear of the printer.



```
HHHH EPSON Status Sheet HHHH

<General Information>
MAC Address        XX:XX:XX:XX:XX:XX
Software           XX.XXXXXXXX  XX
Printer Model      TM-C3500
Printer Name       EPSON752000

<Ethernet>
Network Status     Auto (Disconnected)

<TCP/IP IPv4>
IPv4               Enable
Obtain IP Address  Manual
IP Address         XXX.XXX.XXX.XXX
Subnet Mask        XXX.XXX.XXX.XXX
Default Gateway    XXX.XXX.XXX.XXX
APIPA              Enable/Disable
DNS ADDR Acquisition Auto
Pri DNS Address    None
Sec DNS Address    None

<SNMP>
Default Community  Enable
Read Only Community ******
Read Write Community ******

<Security>
IP Filtering       Disable
Unset Rules        16
Enable Rules       0
Disable Rules      0

<Service>
HTTP               Enable
ENPC               Enable
SNMP               Enable
LPR                Enable
Port9100           Enable
WSD                Enable

<Id e Timeout>
LPR                300[sec]
Port9100           300[sec]
WSDPrint           300[sec]


HHHHHHHHHHHHHHHHHHHHHHHHH
```

**Figure 4-3. Status sheet**

Check

☐ If any of the following errors occurs while printing a status sheet, reprint after error recovery is not performed:
  - Roll paper cover open
  - Paper out error
  - Paper jam error

☐ "Read Only Community" and "Read Write Community" are printed only when a value is set.

# Identifying Problems

## Before Identifying Problems

When checking reproducibility, make sure to turn on DIP switch 4 to disable the AID (automatic nozzle check) function. Otherwise, the AID operation repeats endlessly for AID related errors, or the last error may not be reproduced due to the AID function with printing errors. (See page 39, " DIP Switch Settings.")

## Identifying Problems Using the Messages

When identifying problems using a message on the LCD, see page 88 " Troubleshooting from the messages on the LCD".

## Identifying Problems Using the Fatal Error Code

Using the adjustment program, you can read out the last 5 fatal errors recorded in the EEPROM. (See page 252, " Get Fatal Error Information.") For the fatal error codes and corresponding remedies, see page 93, " Remedies."

## Identifying Problems by Fault Symptoms

When identifying problems by fault symptoms, see page 102, " Fault Symptoms and Remedies." In this section, the procedures for solving the following problems are described.

☐ “The ⏻ (Power) LED is Not On” (Page 102)
☐ “Panel operation is not possible” (Page 103)
☐ “Printing is Not Performed” (Page 103)
☐ “Paper Feed Operation is Not Performed/Paper Jams During Paper Ejection” (Page 103)
☐ “Print Result is Not Normal” (Page 104)
☐ “Ink smears on the printed side” (Page 104)
☐ “Dot missing” (Page 105)
☐ “Black marks or dots are printed” (Page 106)
☐ “Vertical lines are not lined up” (Page 106)
☐ “Paper is not cut” (Page 107)
☐ “The Printer Does Not Communicate” (Page 108)
☐ “Buzzer Does Not Sound” (Page 108)
☐ “LCD Does Not Displayed.” (Page 109)

## Troubleshooting from the messages on the LCD

If the indicators indicate that an error has occurred in the printer, clear the error according to the recovery methods below.
For the meaning of each LED indication, see page 32 " Part Names and Functions"

| **LCD display Error** | **LED** | | | | | **Description** | **Remedy** |
|---|---|---|---|---|---|---|---|
| | **Status Green** | **Status Orange** | **Power Green** | **Paper Orange** | **Ink Orange** | | |
| MEDIA FORM ERROR<br>Media form error | OFF | Flashing | --- | ON | --- | The type of the paper set in the printer is different from the specified type set for “Media position detection settings”. | Set the type of paper specified for “Media position detection settings” or change the settings for “Media position detection settings” to that is suitable for the loaded paper. |
| MEDIA SIZE ERROR<br>Media size error | OFF | Flashing | --- | ON | --- | The paper size is inappropriate for the print area. | Set the paper whose size matches the print area or change the print area to that suitable for the loaded paper.<br>Paper dust can cause inappropriately detection of the paper size so that, MEDIA SIZE ERROR will occur. In this case, clean the platen. (See page 256, " Platen Cleaning.") |
| PAPER JAM ERR ##<br>##:01 to 0E, 55 to 5C, 80<br>Paper jam error | OFF | Flashing | --- | ON | --- | The paper is jammed. | ☐ When using roll paper:<br>1. Open the roll paper cover, and check for paper jams in the paper path; remove jammed paper if any.<br>2. Install the roll paper, and close the roll paper cover.<br>☐ When using fanfold paper:<br>1. Open the roll paper cover, and check for paper jams in the paper path, remove jammed paper if any.<br>2. Close the roll paper cover.<br>3. Insert a stack of fanfold paper in the fanfold paper slot on the back of the printer.<br>☐ If the problem is not solved by the remedies above, check the fatal error code.<br>(See page 99, " Paper jam error*.") |
| PAPER JAM ERR ##<br>##:81<br>Paper jam error | OFF | Flashing | --- | ON | --- | Fanfold paper is loaded when the media settings are set to roll paper. | Load the paper that matches the media settings. |

| LCD display Error | LED | | | | | Description | Remedy |
|---|---|---|---|---|---|---|---|
| | Status Green | Status Orange | Power Green | Paper Orange | Ink Orange | | |
| PAPER REMOVAL ER<br>Paper removal error | OFF | Flashing | --- | ON | --- | Fanfold paper is inserted when fanfold paper still remains in the printer. | 1. Pull out the fanfold paper that remains in the paper exit.<br>2. Inset fanfold paper into the fanfold paper slot at the back of the printer. |
| PAPER OUT ERROR<br>Paper out error | OFF | Flashing | --- | ON | --- | Paper is out. | ☐ When using roll paper:<br>1. Open the roll paper cover. If there is any paper or a paper roll left, remove it.<br>2. Set a roll paper. Close the roll paper cover.<br>☐ When using fanfold paper:<br>1. If there is any fanfold paper left in the paper exit, remove the paper.<br>2. Insert the fanfold paper into the fanfold paper slot on the printer rear. |
| ROLL COVER OPEN<br>Roll paper cover open | OFF | Flashing | --- | ON | --- | The roll paper cover is open. | Close the roll paper cover. |
| INK COVER OPEN<br>Ink cartridge cover open | OFF | Flashing | --- | --- | ON | The ink cartridge cover is open. | Close the ink cartridge cover. |
| NO INK CARTRIDGE<br>No ink cartridge | OFF | Flashing | --- | --- | ON | An ink cartridge is not loaded | 1. Open the ink cartridge cover.<br>2. Load an ink cartridge with sufficient ink left.<br>3. Close the ink cartridge cover. |
| INK READ ERROR<br>Ink cartridge read error | OFF | Flashing | --- | --- | ON | The ink cartridge information could not be read. | 1. Open the ink cartridge cover.<br>2. Remove the ink cartridge.<br>3. Load the ink cartridge again.<br>4. Close the ink cartridge cover.<br>5. If the error occurs again, replace the ink cartridge with a new one. |
| M/B COVER OPEN<br>Maintenance box cover open | OFF | Flashing | --- | --- | ON | The maintenance box cover is open. | Close the maintenance box cover. |

| LCD display Error | LED |  |  |  |  | Description | Remedy |
|---|---|---|---|---|---|---|---|
|  | Status Green | Status Orange | Power Green | Paper Orange | Ink Orange |  |  |
| NO MAINT BOX<br>No maintenance box | OFF | Flashing | --- | --- | ON | The maintenance box is not loaded. | 1. Open the maintenance box cover.<br>2. Load a maintenance box with sufficient space.<br>3. Close the maintenance box cover. |
| M/B READ ERROR<br>Maintenance box read error | OFF | Flashing | --- | --- | ON | The maintenance box information could not be read. | 1. Open the maintenance box cover.<br>2. Remove the maintenance box.<br>3. Load the maintenance box again.<br>4. Close the maintenance box cover.<br>5. If the error occurs again, replace the maintenance box with a new one. |
| REPLACE INK<br>Replace ink cartridge | OFF | Flashing | --- | --- | ON | It is time to replace the ink cartridge. | 1. Open the ink cartridge cover.<br>2. Remove the used ink cartridge.<br>3. Load an ink cartridge with sufficient ink.<br>4. Close the ink cartridge cover. |
| REPLACE MAINT B<br>Replace maintenance box | OFF | Flashing | --- | --- | ON | It is time to replace the maintenance box. | 1. Open the maintenance box cover.<br>2. Remove the used maintenance box.<br>3. Load a maintenance box with sufficient space.<br>4. Close the maintenance box cover. |
| PRINTER ERROR ##<br>##: 7B or 7C<br>Printer error 7B or 7C | OFF | Flashing | Flashing | Flashing | Flashing | Environmental temperature is our of spec. | Environmental temperature is too low (7B) or too high (7C). Set operating temperature from 10 to 35°C {50 to 95°F}. Turn on the power again. |

| LCD display Error | LED | | | | | Description | Remedy |
|---|---|---|---|---|---|---|---|
| | Status Green | Status Orange | Power Green | Paper Orange | Ink Orange | | |
| PRINTER ERROR ##<br>##: 20 to 54, 64 to 75, A9, B0 to DA<br>Printer error | OFF | Flashing | Flashing | Flashing | Flashing | Paper jam<br>Poor autocutter operation<br>Irregular ambient temperature<br>Malfunction | The printer will not recover until you perform the proper processing, then turn the power on again.<br>☐ When using roll paper:<br>1. Open the roll paper cover, and check for paper jams in the paper path, remove jammed paper if any.<br>2. Install the roll paper, and close the roll paper cover.<br>3. Turn the power on again.<br>4. If the error occurs again, perform repairs.<br>☐ When using fanfold paper:<br>1. Open the roll paper cover, and check for paper jams in the paper path, remove jammed paper if any.<br>2. Close the roll paper cover.<br>3. Turn the power on again.<br>4. If the error occurs again, perform repairs. |
| SERVICE REQD. ##<br>##: A0 to A3<br>Service required | OFF | Flashing | Flashing | Flashing | Flashing | The product is beyond its service life. | Perform repairs. The printer will not recover until the necessary repair is performed and the necessary area of the nonvolatile memory is overwritten. |
| Failure in firmware updating | ON | ON | ON | Flashing | Flashing | Failed to update the firmware. | Turn the power on again, and if the error occurs again, perform repairs. |

| **LCD display Error** | **LED** | | | | | **Description** | **Remedy** |
|---|---|---|---|---|---|---|---|
| | **Status Green** | **Status Orange** | **Power Green** | **Paper Orange** | **Ink Orange** | | |
| PAPER OUT<br>Paper out | --- | --- | --- | ON | --- | There is no paper. | ☐ When using roll paper:<br>1. Open the roll paper cover. If there is any paper or a paper roll left, remove it.<br>2. Set a roll paper. Close the roll paper cover.<br>☐ When using fanfold paper:<br>1. If there is fanfold paper left at the paper exit, pull the paper out.<br>2. Insert the fanfold paper into the fanfold paper slot on the printer rear. |
| INK LOW<br>Ink cartridge low | --- | --- | --- | --- | Flashing | Ink is running low. | Because it is almost time to replace the ink cartridge, prepare an ink cartridge for replacement. When the status changes to “Replace ink cartridge”, replace the ink cartridge. |
| M/B NEAR FULL<br>Maintenance box near full | --- | --- | --- | --- | Flashing | The maintenance box is almost full. | Because it is almost time to replace the maintenance box, prepare a maintenance box for replacement. When the status changes to “Replace maintenance box”, replace the maintenance box. |
| NOZZLE CLOGGED<br>Print head nozzle clogged | --- | --- | --- | --- | --- | A nozzle clog that cannot be recovered from occurred. | Check the printing result, and if the nozzle clog cannot be permitted, perform repairs. |
| CUT UNAVAILABLE<br>In cutter unavailable state | --- | --- | --- | --- | --- | Autocutting is being performed 2 or more times with the paper in the same position. | To prevent pieces of paper, autocutting cannot be performed twice or more without feeding the paper. Autocutting is unnecessary. |
| SERVICE MODE<br>In service mode | --- | --- | --- | --- | --- | The product is in the mode for performing repairs and inspections. | The product is in the mode for repairs and inspections. Use it with DIP switch 4 OFF. After changing the DIP switch, turn the power on to enable it. |
| SERVICE SOON ##<br>##: A0 to A3<br>Service due soon | --- | --- | --- | --- | --- | The product is near the end of its service life. | Because the internal parts of the printer are near the end of their service life, prepare to replace the printer, or prepare a printer for replacement. When the status changes to “Service required”, the printer will not recover until the necessary repairs are performed and the necessary area of the nonvolatile memory is overwritten. |

# Remedies

## Maintenance required

Information on the last five errors is stored in EEPROM (Address: 05A to 06F). To check the error codes, use the Adjustment Program.

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| Maintenance required | Waste ink overflow | A0H | Waste ink absorption of the cartridge holder unit (546) has reached its limit. | Replace the cartridge holder unit (546), and execute "Reset Waste ink absorber counter" (Tray ink counter B reset). |
| | Ink holder waste ink overflow | A2H | Waste ink absorption of the cartridge holder unit (546) has reached its limit. | Replace the cartridge holder unit (546) that has reached its limit, and execute "Reset Waste Ink Holder Counter". |
| | Tube maintenance error | A3H | Ink tube duration for the carriage assembly (516) operation has reached its limit. | Replace the supply duct unit (524) with a new one, and execute "Reset Tube Maintenance Counter". |

## *Fatal errors*

Information on the last five errors is stored in EEPROM (Address: 05A to 06F). To check the error codes, use the Adjustment Program.

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| DC error | PID over-speed error* | 01H | Error occurred in the motor assembly operation sequence. | ☐ Check if a paper jam occurred, remove jammed paper if any. (See page 77, " Removing Jammed Paper.")<br>☐ Check carriage movement:<br>Slide the carriage manually to check if it moves smoothly. (See page 120 " Releasing the Carriage Lock")<br>☐ Check the following parts, and replace them if necessary.<br>■ Check if the carriage scale (130) is dirty or damaged.<br>■ Check if the carriage shaft (514) is dirty or not lubricated properly.<br>■ Check the carriage belt for damage or inappropriate tension.<br>■ Check if the encoder board assembly (525) is dirty or damaged.<br>■ Check/replace the main circuit board unit (201). (Page 138)<br>■ Check/replace the CR motor assembly (517). (Page 168)<br>■ Check the cable of the CR motor assembly (517) for incorrect connection or damage.<br>■ Check the head FFC, A (529) /head FFC, B (530) for incorrect connection or damage. |
| | PID over-load error * | 02H | | |
| | PID speed lowered error* | 03H | | |
| | PID reversing detected error * | 08H | | |
| | Load positioning over-speed error* | 0BH | | |
| | PID lock error* | 0CH | | |
| | Load positioning reversing detected error* | 0DH | | |
| | Load positioning overload error* | 0EH | | |
| Pressure motor error | Pressure loss error | 20H | Pressure mechanism sequence error occurred during pressure operation. | ☐ Check the tube path routed between the press pump motor, press pump sensor, I/C cover holder assembly (144),and print head (528) for air leak.<br>☐ Check the pressure pump unit (551) operation.<br>☐ Check the sensor of the pressure pump unit (551).<br>☐ Check the status of the following parts and replace them if necessary.<br>■ Pressure pump unit (551) (Page 184)<br>■ I/C cover holder assembly (144) (Page 133)<br>■ Valve head assembly (501) (Page 149)<br>■ Main circuit board unit (201) (Page 138) |
| | Pressure decreasing error | 21H | | |

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| Motor monitoring error | CR (PID) drive overtime error | D1H | Motor did not stop after the specified period passed. | Check the main circuit board unit (201), and replace it if necessary. (Page 138) |
| | CR (load positioning) drive overtime error | D2H | | |
| | PF drive overtime error | D3H | | |
| | PUMP drive overtime error | D6H | | |
| Motor monitoring error | AC drive overtime error | D7H | Motor did not stop after the specified period passed. | ☐ Check the connection and the path.<br>☐ Check the operation of the cutter motor inside the auto cutter unit (523) (Page 110). If any abnormality is found, replace the auto cutter unit (523). (Page 165)<br>☐ Check the main circuit board unit (201), and replace it if necessary. (Page 138) |
| | Paper out drive overtime error | D9H | Motor did not stop after the specified period passed. | Check the main circuit board unit (201), and replace it if necessary. (Page 138) |
| | Pressure operation time exceeded error | DAH | | |
| Application error | EEPROM verify error | B0H | Data reading/writing on EEPROM cannot be made normally. | ☐ Re-install the firmware using the adjustment program.<br>☐ If not improved, replace the main circuit board unit (201) with a new one. (Page 138) |
| | System error | B2H | | Check the main circuit board unit (201), and replace it if necessary. (Page 138) |

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| Head system error | Transistor environmental temperature error | 40H | Head temperature exceeded the specified range. | Wait until the head temperature drops. If not improved, check (replace if necessary) the following parts.<br>■ Print head (528) (Page 149)<br>■ Head FFC, A (529) /Head FFC, B (530) (Page 149)<br>■ Main circuit board unit (201) (Page 138) |
|  | X-Hot detected before printing error | 41H | Driver IC on the print head detected a temperature that exceeds the specified range. | Check the following parts, and replace them if necessary.<br>■ Print head (528) (Page 149)<br>■ Head FFC, A (529) /Head FFC, B (530) (Page 149)<br>■ Main circuit board unit (201) (Page 138) |
|  | X-Hot detected after flushing error | 42H |  |  |
|  | Head temperature error | 43H | Head temperature exceeded the specified range. | Wait until the head temperature drops. If not improved, check (replace if necessary) the following parts.<br>■ Print head (528) (Page 149)<br>■ Head FFC, A (529) /Head FFC, B (530) (Page 149)<br>■ Main circuit board unit (201) (Page 138) |

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| Head system error | Print unfinished error when the carriage drive is stopped* | 44H | Since speed variation of the carriage is large, the print can not be finished when the carriage drive is stopped.<br>☐ Jammed paper is not removed and remaining in the carriage operation area.<br>☐ Carriage belt tension is abnormal.<br>☐ Deformation of the carriage scale. | ☐ Check if a paper jam occurred, remove jammed paper if any. (See page 77, " Removing Jammed Paper.")<br>☐ Check carriage movement: Slide the carriage manually to check if it moves smoothly. (See page 120 " Releasing the Carriage Lock")<br>☐ Check the following parts, and replace them if necessary.<br>■ Check if the carriage scale (130) is dirty or damaged.<br>■ Check if the carriage shaft (514) is dirty or not lubricated properly.<br>■ Check the carriage belt for damage or inappropriate tension.<br>■ Check if the encoder board assembly (525) is dirty or damaged.<br>■ Check/replace the main circuit board unit (201). (Page 138)<br>■ Check/replace the CR motor assembly (517). (Page 168)<br>■ Check the cable of the CR motor assembly (517) for incorrect connection or damage.<br>■ Check the head FFC, A (529) /head FFC, B (530) for incorrect connection or damage. |

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| Sequential error | Home seek error | 50H | Error occurred in the carriage assembly (516) operation sequence. | ☐ Slide the carriage manually to check if it moves smoothly.<br>☐ Check the following parts, and replace them if necessary.<br>■ Check if the carriage scale (130) is dirty or damaged.<br>■ Check if the carriage shaft (514) is dirty or not lubricated properly.<br>■ Check the carriage belt for damage or inappropriate tension.<br>■ Check if the encoder board assembly (525) is dirty or damaged.<br>■ Check/replace the main circuit board unit (201). (Page 138)<br>■ Check/replace the CR motor assembly (517). (Page 168)<br>■ Check the cable of the CR motor assembly (517) for incorrect connection or damage.<br>■ Check the head FFC, A (529) /head FFC, B (530) for incorrect connection or damage. |
| | CR lock release error | 51H | | |
| | CR lock set error | 52H | | |
| | AC position error | 53H | Cutter home position could not be found. | ☐ Check the connection and the path.<br>☐ Check the operation of cutter sensor. (Page 111)<br>☐ Check the operation of the auto cutter unit (523), and replace it if necessary. (Page 165)<br>☐ Check main circuit board unit (201), and replace it if necessary. (Page 138) |
| | AC jam error | 54H | The cutter blade is locked because a foreign object or paper is stuck. | ☐ Check if paper jam has occurred, and remove jammed paper if any.<br>☐ Check the connection and the path.<br>☐ Check the operation of the cutter sensor. (Page 111)<br>☐ Check the operation of the auto cutter unit (523), and replace it if necessary. (Page 165)<br>☐ Check the main circuit board unit (201), and replace it if necessary. (Page 138) |

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| Sequential error | Paper jam error* | 55H | The detectors are in the following status when a print job is started.<br>☐ Paper eject detector: no paper detected<br>☐ Label detector: paper detected<br>☐ Black mark detector: paper detected | Check the paper eject detector and actuator, and replace the platen sub unit (511) if necessary. (Page 187) |
| | | 56H | The PW detector cannot detect the paper end. | Check the PW detector, and replace the carriage assembly (516) if necessary. (Page 157) |
| | | 57H | After one page is printed, the paper eject detector detects no paper. | Check the paper eject detector and actuator, and replace the platen sub unit (511) if necessary. (Page 187) |
| | | 59H | The paper eject detector detects paper even when the PF motor is rotated more than the specified times after both the label detector and black mark detector detect no paper. | Check the paper eject detector (Page 111), and replace the platen sub unit (511) if necessary. (Page 187) |
| | | 5AH | Both the label detector and black mark detector detect paper when a paper removal error has been released. | Check the label detector and black mark detector (Page 111), and replace the platen sub unit (511) if necessary. (Page 187) |
| | | 5CH | The PF motor has stopped while the detectors are in the following status when fanfold paper is being loaded.<br>☐ Paper eject detector: no paper detected<br>☐ Label detector: paper detected<br>☐ Black mark detector: paper detected | ☐ Check whether any oily objects adhere to the roller of the paper feed shaft assembly (513).<br>☐ Check whether the roller of the paper feed shaft assembly (513) is rotating.<br>☐ Check the paper eject detector (Page 111), and replace the platen sub unit (511) if necessary. (Page 187) |
| Sensor system error | Acceleration sensor error | 64H | The acceleration sensor is broken. | Check the acceleration sensor board assembly (538), and replace it if necessary. (Page 159) |
| | Over voltage error | 65H | The main circuit board unit is broken. | Check the main circuit board unit (201), and replace it if necessary. (Page 138) |

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| AID error | Irregular waveform error | 71H | Noise detected | ☐ Some noise might be detected temporarily. Turn on the power and perform the nozzle check 3 times to check if the error occurs again.<br>☐ Check the cap for any foreign objects, and remove any you fined.<br>☐ Check the connection and the path.<br>☐ Check the main circuit board unit (201), and replace it if necessary. (Page 138) |
| | Failed head error | 73H | ☐ After 5 times of cleaning, the suspected cause does not fall under the causes of unrecoverable nozzle clogging error (A7H) and CL maintenance error (A8H).<br>☐ When in other than Anti-missing Color Mode and after 5 or fewer times of cleaning, the warning for nozzle clogging is displayed on the information about nozzle clogging. | Clean the print head manually using the Adjustment Program; then check nozzle check pattern. (Repeat the process if necessary.)<br>■ Missing dots still exist: replace the print head (528). (Page 149)<br>■ No missing dot exists but failed head error (73H) still occurs: Check the Pump and AID circuit board unit (518), and replace it if necessary. (Page 136) |
| | VOUT error | 75H | Abnormal VOUT value (0V at AID flushing) | ☐ Check the connection between the AID circuit board assembly (556) and main circuit board unit (201). (Page 136)<br>☐ Check the AID circuit board assembly (556), and replace it if necessary. (Page 136) |
| | Low temperature error | 7BH | When cleaning is judged to be necessary in AID inspection, the temperature of the thermistor has dropped below the specified value. | Replace the print head (528). (Page 149) |
| | High temperature error | 7CH | When cleaning is judged to be necessary in AID inspection, the temperature of the thermistor has risen above the specified value. | Replace the print head (528). (Page 149) |
| | AID circuit board error | A9H | AID circuit board assembly (556) is broken. | Replace the AID circuit board assembly (556). (Page 136) |

| Error | Details | Error code | Suspected cause/part | Judgment and remedy |
|---|---|---|---|---|
| Paper out error | Paper out step over error* | 80H | ☐ The roll paper jammed.<br>☐ The paper out motor did not stop after the specified period passed since the PF motor stopped. | ☐ Check if a paper jam occurred, and remove jammed paper if any. (See page 77, " Removing Jammed Paper.")<br>☐ Clean the roller for the paper out roller assembly (510).<br>☐ Check the operation of the paper out motor. (Page 111)<br>☐ Check the paper out roller assembly (510), and replace it if necessary. (Page 195)<br>☐ Check the operation of the paper out detector (Page 111), and replace the platen sub unit (511) if any abnormality is found. (Page 187) |
| | | | The position for the paper width is adjusted smaller than the roll paper width. | ☐ Check the adjustment position for the paper width.<br>☐ Check the movement of the lever tension, and replace the platen sub unit (511) if any abnormality is found. (Page 187) |
| | | 81H | Fanfold paper is loaded when the media settings are set to roll paper. | Load the paper that matches the media settings. |

* : The LCD message and the LED indication are the same as that for the paper jam error.

# Fault Symptoms and Remedies

## The ⏻ (Power) LED is Not On

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| AC cable connection failure | Check if the AC cable (118) is connected firmly to the AC adapter (119). | Connect the AC cable (118) correctly. |
| Faulty AC cable | Connect a normal AC cable (118). | Replace the AC cable (118). |
| Connection failure between the AC adapter and the main circuit board unit | Check the connection between the cable for the AC adapter (119) and the main circuit board unit (201). | Connect the cable correctly. |
| Connection failure between the main circuit board unit and the panel circuit board assembly | Check the cable connection between the parts and each circuit board. | Connect the cable correctly. |
| Connection failure between the acceleration sensor board assembly and the main circuit board unit | Check the cable connection between the parts and each circuit board. | Connect the cable correctly. |
| AC adapter failure | Check if the AC adapter (119) is damaged. | Replace the AC adapter (119). |
| The ⏻ (Power) LED failure | Check if the A/C case assembly (112) is damaged. | Replace the A/C case assembly (112). (Page 162) |
| Acceleration board lead wire failure | Check if the Acceleration board lead wire (539) is damaged. | Replace the Acceleration board lead wire (539). (Page 159) |
| Acceleration sensor board assembly failure | Check if the Acceleration sensor board assembly (538) is damaged. | Replace the Acceleration sensor board assembly (538). (Page 159) |
| Main circuit board unit failure | Check if the main circuit board unit (201) is damaged. | Replace the main circuit board unit (201). (Page 138) |

## Panel Operation is Not Possible

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Connection failure between the panel circuit board assembly and the main circuit board unit | Check the cable connection between the parts and each circuit board. | Connect the cable correctly. |
| Failure of the panel circuit board assembly | Check if the panel circuit board assembly (120) is damaged. | Replace the panel circuit board assembly (120). (Page 166) |
| Failure of the main circuit board unit | Check if the main circuit board unit (201) is damaged. | Replace the main circuit board unit (201). (Page 138) |

## Printing is Not Performed

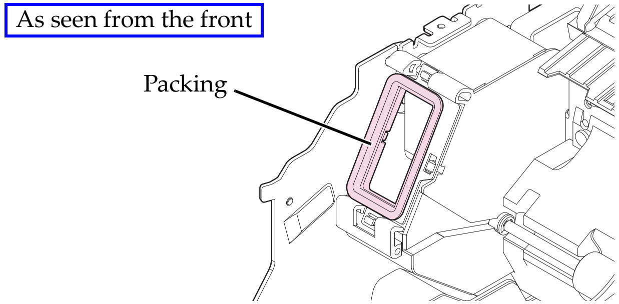
| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Failure of the main circuit board unit | Check if the main circuit board unit (201) is damaged. | Replace the main circuit board unit (201). (Page 138) |

## Paper Feed Operation is Not Performed/Paper Jams During Paper Ejection

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Dirt on the roller of the paper feed shaft assembly | Check if any oily objects adhere to the surface of the roller. | Replace the paper feed shaft assembly (513). (Page 127) |
| Operation failure of the PF-related section | Check if the roller of the paper feed shaft assembly (513) is rotating. | Engage the spur gears of the PF-related section correctly. |
| | Check the connection of the cable to the connector (CN18) on the main circuit board unit (201). | Connect the cables correctly. |
| Failure of the gap adjustment in the paper eject path | Check if the gap between the carriage unit and the platen is correct using the gap gauge. | Execute "Gap adjustment (Between the Roller Set and the Platen)" (Page 228) |
| Operation failure of the suction fan | Check the set value for the suction fan. | Execute “Fan Rotation Adjustment.” (Page 234) |
| | Check if the suction fan is rotating. | Replace the suction fan (507). (Page 176) |

# *Print Result is Not Normal*

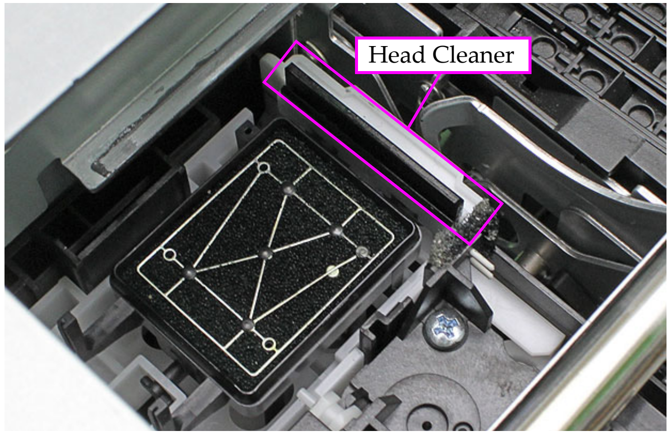
## *Ink smears on the printed side*

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Packing of the suction duct came off. | Check if the packing of the suction duct is detached.<br> | Attach the packing of the suction duct correctly. |
| Failure of the suction fan | 1. Install roll paper with smaller core. (See page 66, " Installing the Roll Paper.")<br>2. Remove the upper case assembly (Page 131).<br>3. Check, by looking from the top, if the paper is always being sucked flat on to the platen. | Replace the suction fan (507). (Page 176) |

## *Dot missing*

CAUTION

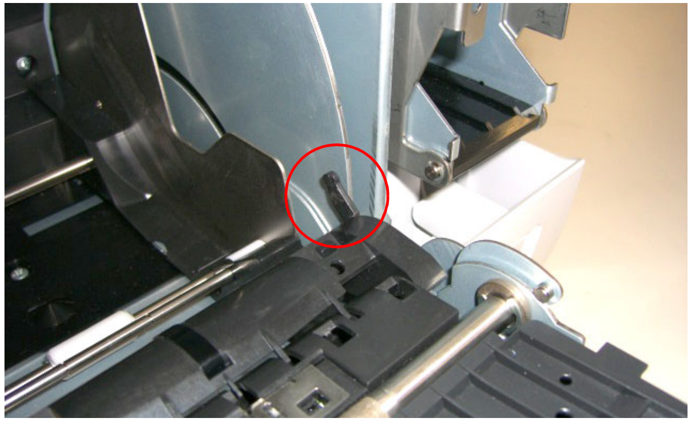
Before you check or remedy the following items, make sure to turn on DIP switch 4 to disable the automatic nozzle check.
(See page 39, " DIP Switch Settings.")

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Contamination of the print head | Repeat head cleaning and nozzle check.<br>(See page 255, " Print Head Cleaning.") | Replace the print head (528). (Page 149) |
| Failure of the print head | Check if the print head (528) is damaged. | Replace the print head (528). (Page 149) |
| Failure of the parts related to the IS pump unit | Check if the head cleaner is dirty.<br>(See page 120, " Releasing the Carriage Lock.")<br><br> | Clean the head cleaner. |
| | Check if the capping absorber is deformed or damaged. | Replace the IS pump unit (518). (Page 189) |
| Failure of the head FFC, A/head FFC, B | Check if the head FFC, A (529) /head FFC, B (530) is damaged. | Replace the head FFC, A (529) /head FFC, B (530). (Page 149) |
| Wrong setting of head rank | --- | Run “Input Head ID” in the Adjustment Program. |

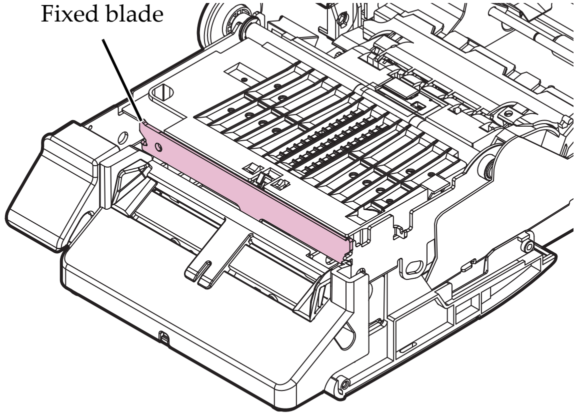
## Black marks or dots are printed

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Contamination of the print head | Repeat head cleaning and nozzle check.<br>(See page 255, " Print Head Cleaning.") | Replace the print head (528). (Page 149) |
| Failure of the Supply duct unit | Check if the ink path in the supply duct unit (524) is damaged (ink leakage). | Replace the supply duct unit (524). (Page 179) |
| Failure of the print head | Check if the print head (528) is damaged. | Replace the print head (528). (Page 149) |
| Connection failure of the head FFC, A /head FFC, B | Check if the head FFC, A (529) /head FFC, B (530) are connected correctly. | Connect the head FFC, A (529)/head FFC, B (530) correctly. |

## Vertical lines are not lined up

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Failure of the parts related to paper feed | Check if the nails of the lever tension are damaged.<br> | Replace the platen sub unit (511). (Page 187) |
| Bi-D adjustment is not performed correctly. | --- | Run “Bi-d adjust” in the Adjustment Program.<br>(See page 229, " Bi-d(VSD1) / AC Adjustment.") |
| Wrong installation of the print head | Check if the print head (528) is installed correctly. | Install the print head (528) correctly. |

## *Paper is Not Cut*

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Dirt on the fixed blade | Check if any glue adheres to the fixed blade.<br><br> | Clean the fixed blade. |
| Connection failure between the auto cutter unit and the main circuit board unit | Check the connection of the cable to the connector (CN20) on the main circuit board unit (201). | Connect the cable correctly. |
| Lifetime of the auto cutter unit | Use the Adjustment Program to check if the counter value of the auto cutter unit has reached the end of the lifetime.<br>(See page 249, " Get Counter Information.") | Replace the auto cutter unit (523). (Page 165) |
| Failure of the auto cutter unit | Check if the auto cutter unit (523) is damaged. | Replace the auto cutter unit (523). (Page 165) |
| Failure of the main circuit board unit | Check if the main circuit board unit (201) is damaged. | Replace the main circuit board unit (201). (Page 138) |

## The Printer Does Not Communicate

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Wrong setting of the Ethernet interface. (LAN model only) | --- | 1. Turn on the printer while pressing the status sheet button (See page 32, " Part Names and Functions."), and keep pressing for more than 20 seconds.<br>2. After the Ethernet interface setting is initialized, make the setting again. |
| Connection failure of the USB cable | Check the connection between the USB cable (117) and the main circuit board unit (201). | Connect the cable correctly. |
| Failure of the USB cable | Check if the USB cable (117) is damaged. | Replace the USB cable (117). |
| Failure of the main circuit board unit | Check if the main circuit board unit (201) is damaged. | Replace the main circuit board unit (201). (Page 138) |

## Buzzer Does Not Sound

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Wrong setting of printer driver | Check the setting of “Buzzer notification on an error” on the printer driver. | Set it to “Sound the buzzer on printing end.” |
| Connection failure between the panel circuit board assembly and the main circuit board unit | Check the cable connection between the parts and each circuit board. | Connect the cable correctly. |
| Failure of the main circuit board unit | Check if the main circuit board unit (201) is damaged. | Replace the main circuit board unit (201). (Page 138) |
| Failure of the panel circuit board assembly | Check if the panel circuit board assembly (120) is damaged. | Replace the panel circuit board assembly (120). (Page 166) |

## *LCD Does Not Displayed*

| Suspected cause/part | Checkpoint | Remedy |
|---|---|---|
| Connection failure between the panel board and main circuit board unit | Check the connection the panel board FFC, B (121). | Connect the cable correctly. |
| Failure of the panel board FFC | Check if the panel board FFC, B (121) is damaged. | Replace the panel board FFC, B (121). (Page 166) |
| Failure of the panel circuit board | Check if the panel circuit board (assembly) (120) is damaged. | Replace the panel circuit board assembly (120). (Page 166) |
| Failure of the main circuit board unit | Check if the main circuit board unit (201) is damaged. | Replace the Main circuit board unit (201). (Page 138) |

# Troubleshooting the Motors and Sensors

The types and the locations of the motors and sensors are shown below.

## Motors

Evaluate the motor's failure by its rotation status. If suspected, replace it with a new one.

| **Motor name** | **ASP name** | **Type** |
|---|---|---|
| CR motor assembly | CR motor assembly (517) | DC brush motor |
| PF motor | --- | Stepping motor |
| Paper out motor | --- | Stepping motor |
| Pressure motor | Pressure pump unit (551) | DC brush motor |
| Pump motor | IS pump unit (518) | Stepping motor |
| Cutter motor | Auto cutter unit (523) | DC brush motor |

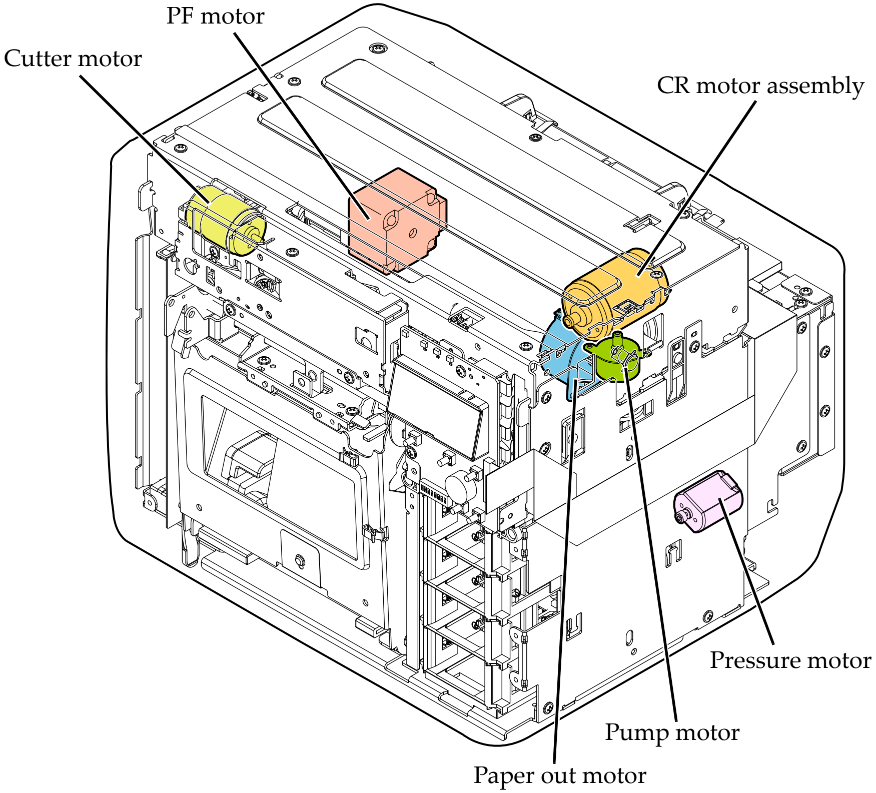

PF motor
Cutter motor
CR motor assembly
Pressure motor
Pump motor
Paper out motor

**Figure 4-4. Location of each motor**

## Sensor

| Sensor name | ASP name | Signal level | Sensor status |
|---|---|---|---|
| Label detector (receiver) (transmissive photo interrupter) | TR circuit board assembly (515) | H: Open | Label detection mode:<br>Label modes other than label detection: No paper. |
| | | L: Closed | Label detection mode:<br>Label modes other than label detection: Paper present. |
| Label detector (emitter) (luminescence LED) | Platen sub unit (511) | --- | --- |
| | | --- | --- |
| Black mark detector (reflective photo interrupter) | Platen sub unit (511) | H: Reflection detected | Paper present (white background). |
| | | L: No reflection | Black mark. |
| Paper width (PW) detector (reflective photo interrupter) | Carriage assembly (516) | H: No reflection | No paper. |
| | | L: Reflection detected | Paper present (white background). |
| Paper out detector (transmissive photo interrupter) | Platen sub unit (511) | H: Shaded | Without any slack/<br>Paper out starts. |
| | | L: Not shaded | With slack/<br>Paper out stops. |
| I/C cover detector (mechanical contact points) | I/C cover holder assembly (144) | H: Open | I/C cover is open. |
| | | L: Closed | I/C cover is closed. |

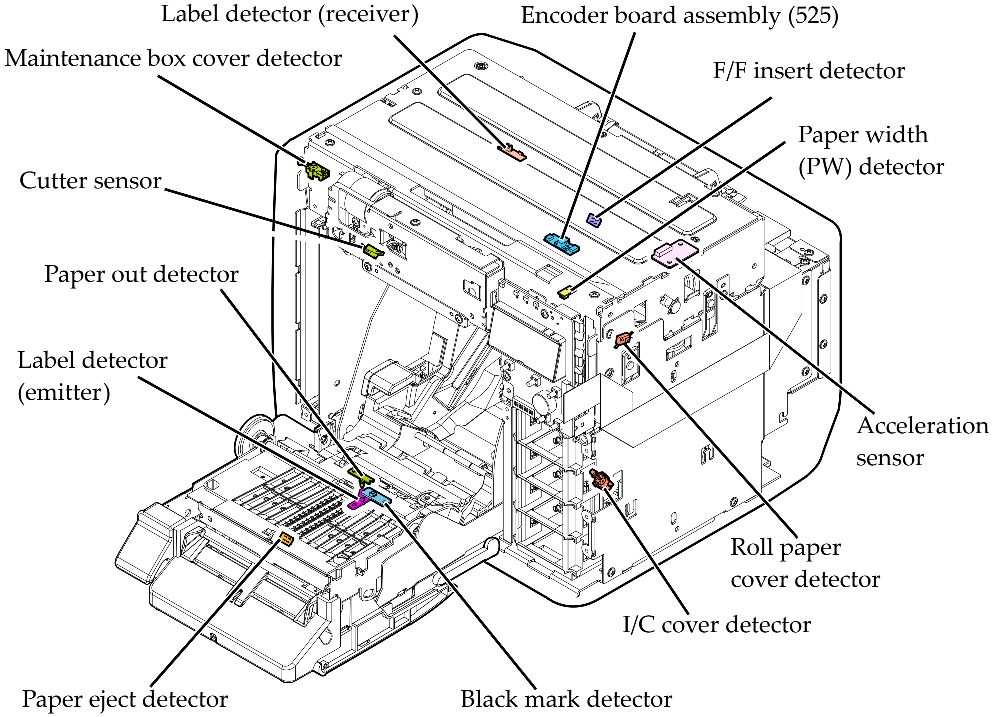

Label detector (receiver)
Encoder board assembly (525)
Maintenance box cover detector
F/F insert detector
Paper width (PW) detector
Cutter sensor
Paper out detector
Label detector (emitter)
Acceleration sensor
Roll paper cover detector
I/C cover detector
Paper eject detector
Black mark detector

**Figure 4-5. Location of each sensor (1)**

| Sensor name | ASP name | Signal level | Sensor status |
|---|---|---|---|
| Maintenance box cover detector (mechanical contact points) | A/C case assembly (112) | H: Open | M/B cover is open. |
| | | L: Closed | M/B cover is closed. |
| Roll paper cover detector (mechanical contact points) | Roll paper cover open detect sub assembly (506) | H: Open | Roll paper cover is open. |
| | | L: Closed | Roll paper cover is closed. |
| Acceleration sensor | Acceleration sensor board assembly (538) | Detection: 2.52G or more | Performs AID. |
| | | Not detected: less than 2.52G | AID is not performed. |
| Cutter sensor (mechanical contact points) | Auto cutter unit (523) | H: Open | Disconnected |
| | | L: Closed | Home position |
| F/F insert detector (transmissive photo interrupter) | F/F insert detector sub assembly (509) | H: Shaded | No F/F paper |
| | | L: Not shaded | F/F paper present |
| Paper eject detector (transmissive photo interrupter) | Platen sub unit (511) | H: Shaded | No paper ejected |
| | | L: Not shaded | Paper ejected |

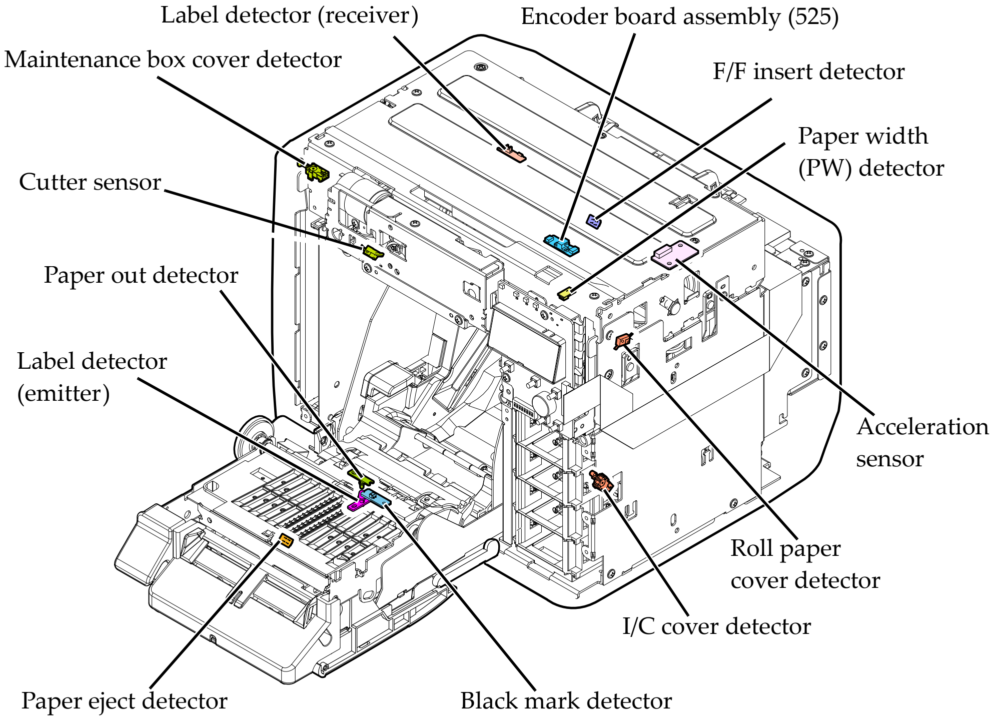

Label detector (receiver)
Encoder board assembly (525)
Maintenance box cover detector
F/F insert detector
Paper width (PW) detector
Cutter sensor
Paper out detector
Label detector (emitter)
Acceleration sensor
Roll paper cover detector
I/C cover detector
Paper eject detector
Black mark detector

**Figure 4-6. Location of each sensor (2)**

# CHAPTER

# 5

# DISASSEMBLY & ASSEMBLY

# Notes for Disassembly and Assembly

Always observe the following precautions when disassembling and assembling the product.

**CAUTION**

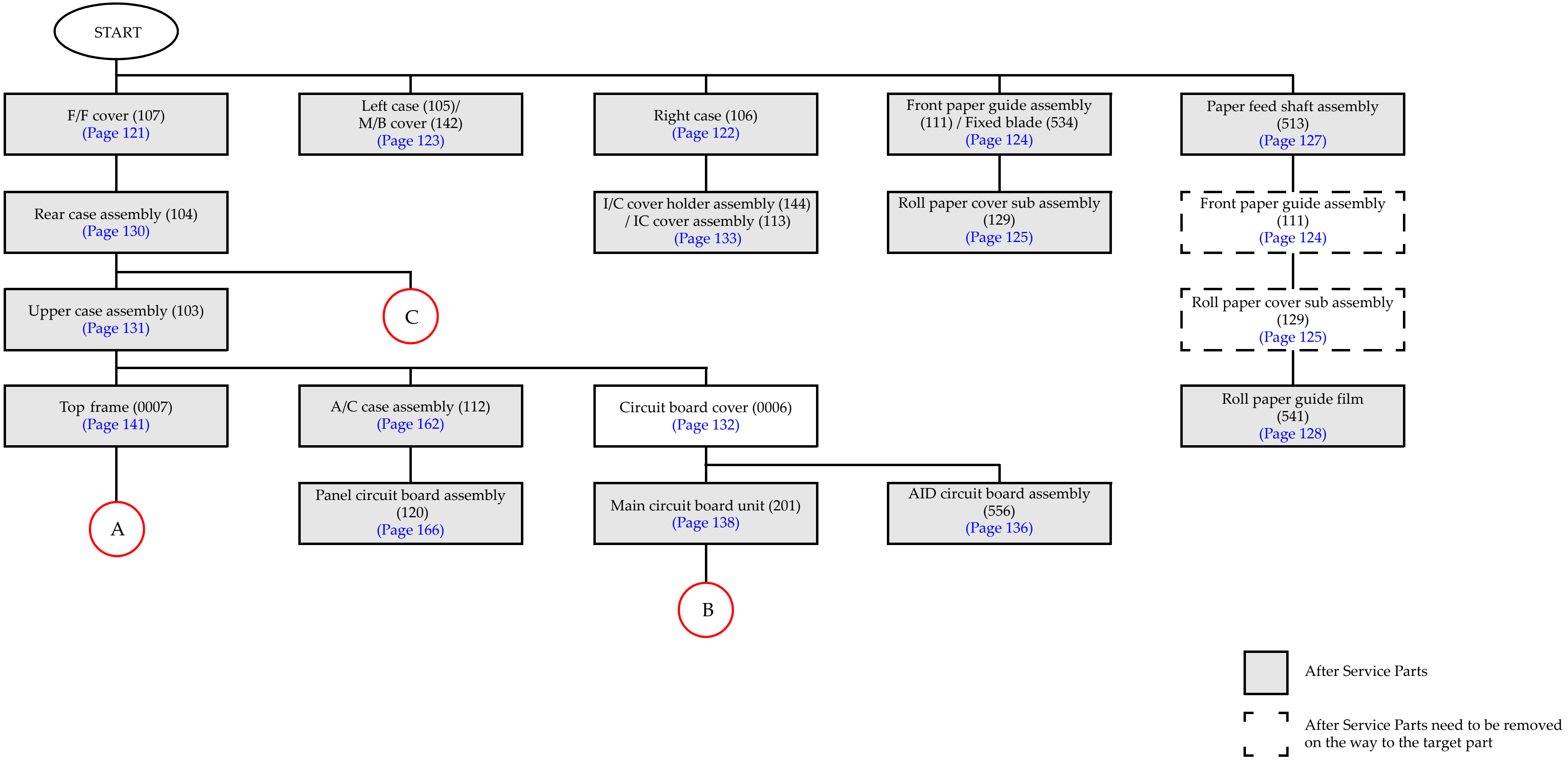
- ☐ Always remove the power supply unit from the printer before working. Power flows to the internal circuit boards even if you turn the printer off with the power switch. You may damage the printer if you work while the power supply is still attached.
- ☐ Remove all peripheral equipment connected to the printer before starting work.
- ☐ Connect or disconnect the flexible flat cable (FFC or FPC) straight into or out of the connector to prevent problems that may result in a malfunction.
- ☐ Wear a grounded wrist band when handling the internal circuit boards to prevent damage from static electricity.
- ☐ When removing an internal circuit board, place it on an anti-static rubber sheet or similar surface to prevent damage from static electricity.
- ☐ Be careful not to subject the circuit boards to shock or vibration, because this may damage them.
- ☐ To prevent contamination that may result in a malfunction, do not touch the circuit board or cable terminals with your hands.
- ☐ Hold circuit boards only by their edges.
- ☐ Do not touch the connector pins of the FFC or the FPC.
- ☐ To avoid electrical shock, when disassembling/reassembling the printer, unplug all the cables including the power cord from the printer.

# Shortest Route for Disassembly

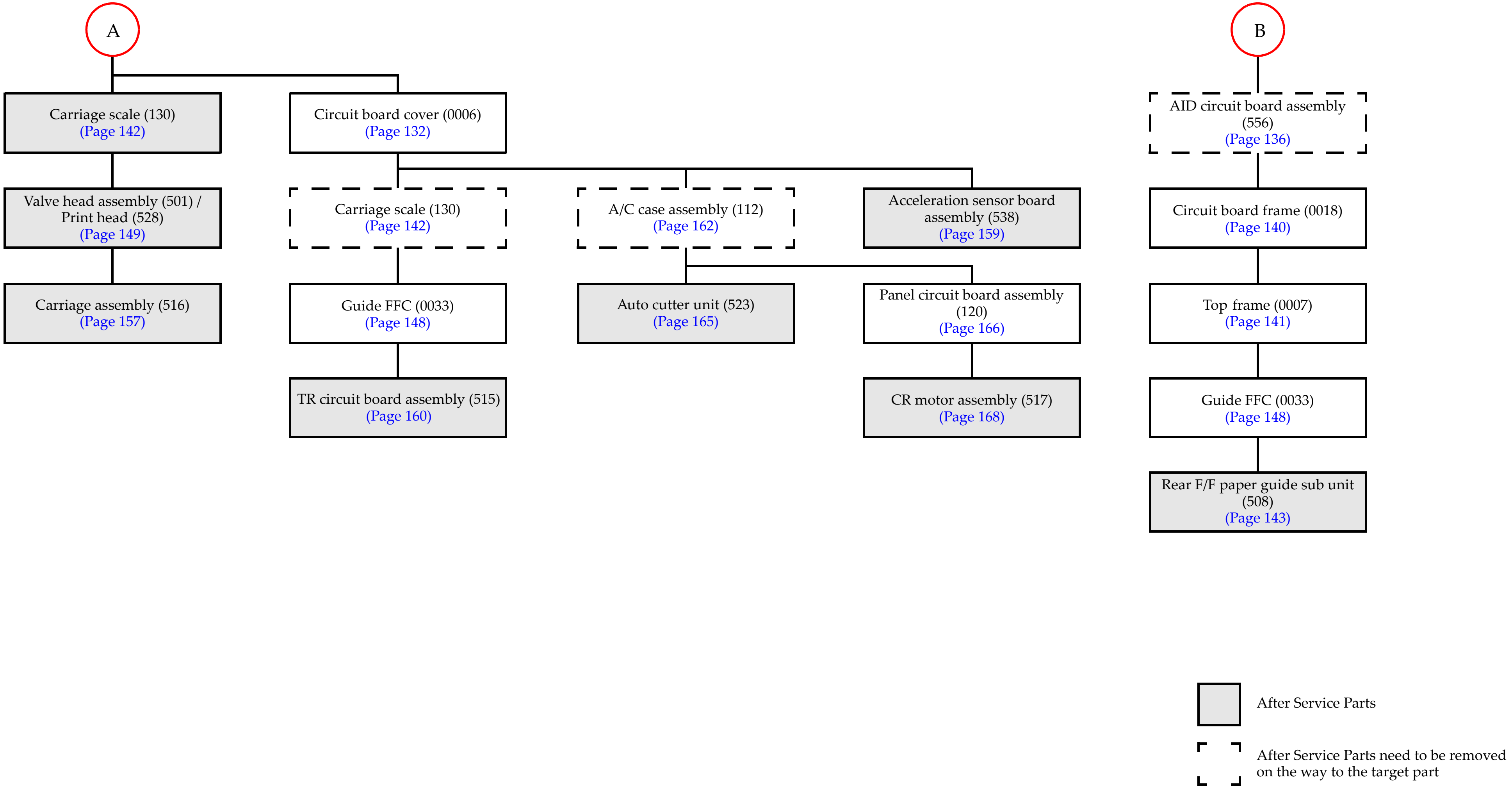
The shortest route for disassembling the main parts/units is shown below.

To replace a part or unit with the shortest steps, remove the upper parts/units connected with it by lines.

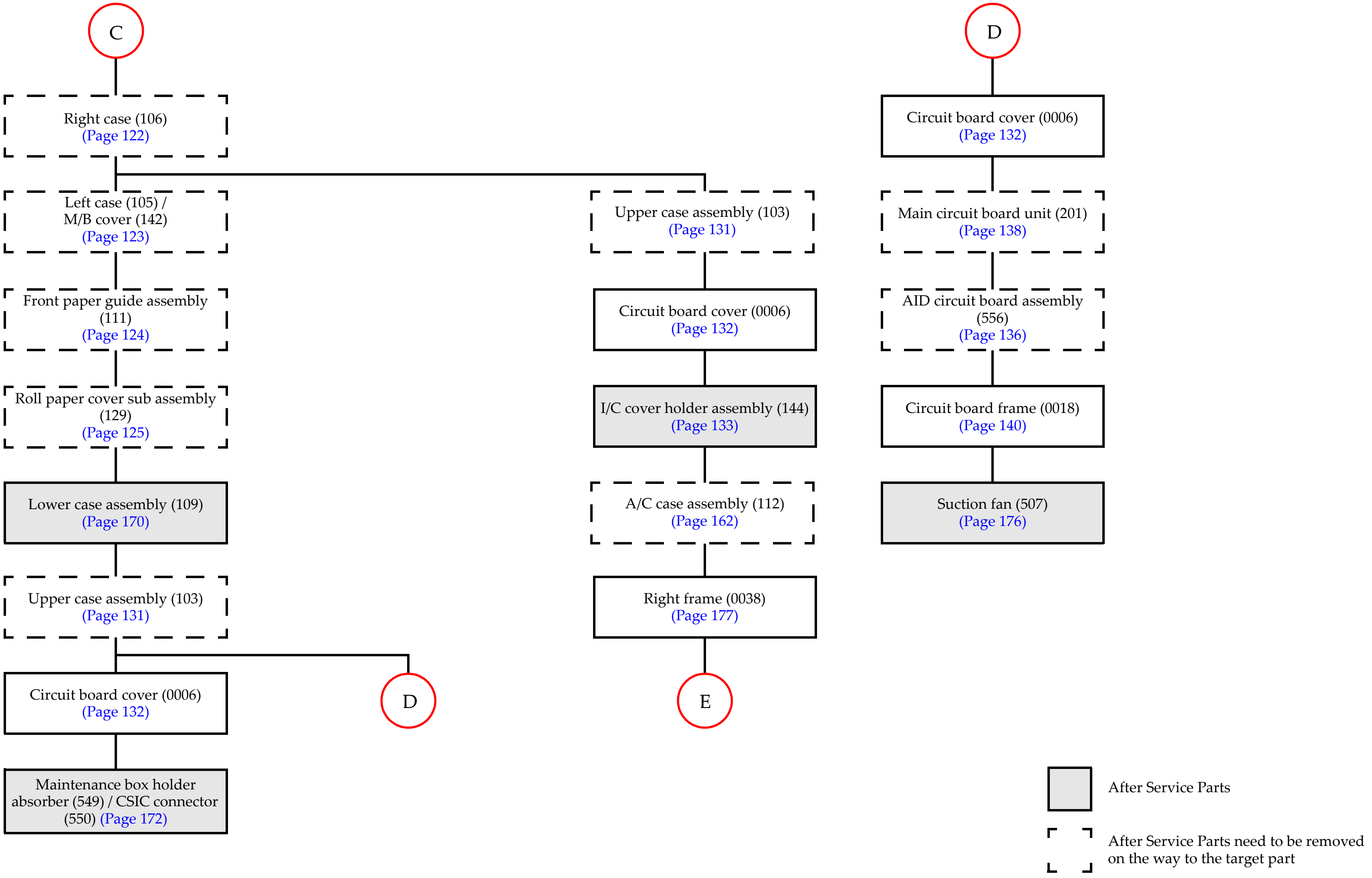
## Flowchart 1


START
F/F cover (107)
(Page 121)
Left case (105)/
M/B cover (142)
(Page 123)
Right case (106)
(Page 122)
Front paper guide assembly
(111) / Fixed blade (534)
(Page 124)
Paper feed shaft assembly
(513)
(Page 127)
Rear case assembly (104)
(Page 130)
I/C cover holder assembly (144)
/ IC cover assembly (113)
(Page 133)
Roll paper cover sub assembly
(129)
(Page 125)
Front paper guide assembly
(111)
(Page 124)
Upper case assembly (103)
(Page 131)
C
Roll paper cover sub assembly
(129)
(Page 125)
Top frame (0007)
(Page 141)
A/C case assembly (112)
(Page 162)
Circuit board cover (0006)
(Page 132)
Roll paper guide film
(541)
(Page 128)
Panel circuit board assembly
(120)
(Page 166)
Main circuit board unit (201)
(Page 138)
AID circuit board assembly
(556)
(Page 136)
A
B
After Service Parts
After Service Parts need to be removed
on the way to the target part

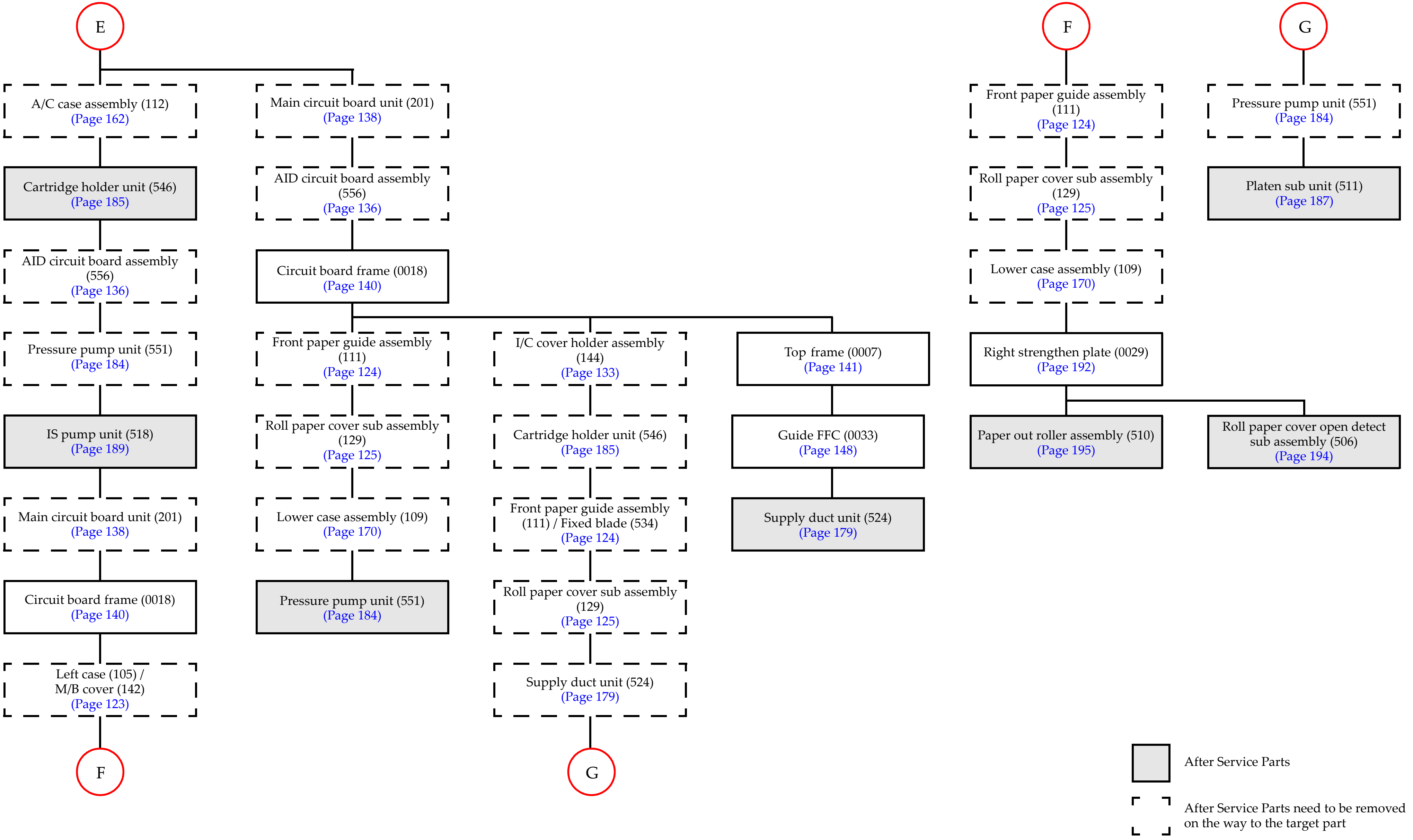
## *Flowchart 2*


A
Carriage scale (130) (Page 142)
Circuit board cover (0006) (Page 132)
Valve head assembly (501) / Print head (528) (Page 149)
Carriage scale (130) (Page 142)
A/C case assembly (112) (Page 162)
Acceleration sensor board assembly (538) (Page 159)
Carriage assembly (516) (Page 157)
Guide FFC (0033) (Page 148)
Auto cutter unit (523) (Page 165)
Panel circuit board assembly (120) (Page 166)
TR circuit board assembly (515) (Page 160)
CR motor assembly (517) (Page 168)
B
AID circuit board assembly (556) (Page 136)
Circuit board frame (0018) (Page 140)
Top frame (0007) (Page 141)
Guide FFC (0033) (Page 148)
Rear F/F paper guide sub unit (508) (Page 143)
After Service Parts
After Service Parts need to be removed on the way to the target part

## *Flowchart 3*


C
Right case (106)
(Page 122)
Left case (105) /
M/B cover (142)
(Page 123)
Front paper guide assembly
(111)
(Page 124)
Roll paper cover sub assembly
(129)
(Page 125)
Lower case assembly (109)
(Page 170)
Upper case assembly (103)
(Page 131)
Circuit board cover (0006)
(Page 132)
Maintenance box holder
absorber (549) / CSIC connector
(550) (Page 172)
D
Upper case assembly (103)
(Page 131)
Circuit board cover (0006)
(Page 132)
I/C cover holder assembly (144)
(Page 133)
A/C case assembly (112)
(Page 162)
Right frame (0038)
(Page 177)
E
D
Circuit board cover (0006)
(Page 132)
Main circuit board unit (201)
(Page 138)
AID circuit board assembly
(556)
(Page 136)
Circuit board frame (0018)
(Page 140)
Suction fan (507)
(Page 176)
After Service Parts
After Service Parts need to be removed
on the way to the target part

## *Flowchart 4*


E
A/C case assembly (112) (Page 162)
Cartridge holder unit (546) (Page 185)
AID circuit board assembly (556) (Page 136)
Pressure pump unit (551) (Page 184)
IS pump unit (518) (Page 189)
Main circuit board unit (201) (Page 138)
Circuit board frame (0018) (Page 140)
Left case (105) / M/B cover (142) (Page 123)
F
Main circuit board unit (201) (Page 138)
AID circuit board assembly (556) (Page 136)
Circuit board frame (0018) (Page 140)
Front paper guide assembly (111) (Page 124)
Roll paper cover sub assembly (129) (Page 125)
Lower case assembly (109) (Page 170)
Pressure pump unit (551) (Page 184)
I/C cover holder assembly (144) (Page 133)
Cartridge holder unit (546) (Page 185)
Front paper guide assembly (111) / Fixed blade (534) (Page 124)
Roll paper cover sub assembly (129) (Page 125)
Supply duct unit (524) (Page 179)
G
Top frame (0007) (Page 141)
Guide FFC (0033) (Page 148)
Supply duct unit (524) (Page 179)
F
Front paper guide assembly (111) (Page 124)
Roll paper cover sub assembly (129) (Page 125)
Lower case assembly (109) (Page 170)
Right strengthen plate (0029) (Page 192)
Paper out roller assembly (510) (Page 195)
Roll paper cover open detect sub assembly (506) (Page 194)
G
Pressure pump unit (551) (Page 184)
Platen sub unit (511) (Page 187)
After Service Parts
After Service Parts need to be removed on the way to the target part

## Tools Required for Disassembly and Assembly

Tools required for assembly and disassembly of the product are shown on page 268, " Appendix B Tools."

## Procedure after Disassembly/Assembly or Replacing the Parts

After disassembling/assembling or replacing the parts, make sure to execute page 244, " Roll Paper Print Test." from the Adjustment Program.

# *Releasing the Carriage Lock*

Release the carriage lock to remove the following parts.

| Part name | Reference |
|---|---|
| Carriage scale (130) | Page 142 |
| Print head (528) | Page 149 |
| Valve head assembly (501) | Page 149 |
| Carriage assembly (516) | Page 157 |
| CR motor assembly (517) | Page 168 |
| IS pump unit (518) | Page 189 |
| Supply duct unit (524) | Page 179 |
| Rear F/F paper guide sub unit (508) | Page 143 |
| Roll paper cover open detect sub assembly (506) | Page 194 |
| Paper out roller assembly (510) | Page 195 |
| Platen sub unit (511) | Page 187 |

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the right case (106). (Page 122)
5. Remove the top frame (0007). (Page 141)
6. Rotate the gear of the IS pump unit counterclockwise, as seen from the top of the printer, to release the carriage lock.

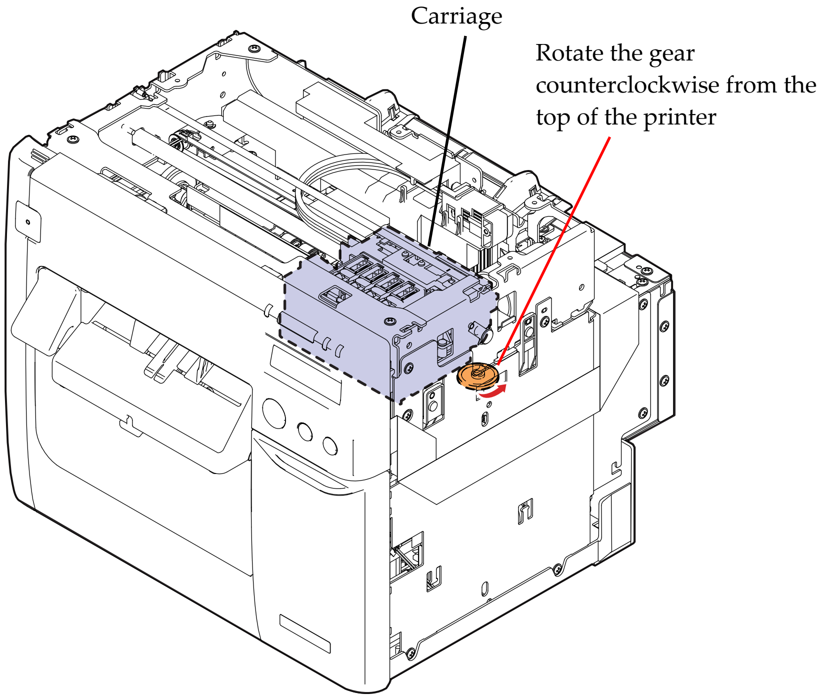

Carriage
Rotate the gear counterclockwise from the top of the printer

**Figure 5-1. Releasing the carriage lock**

# *Procedures for Disassembly and Assembly*

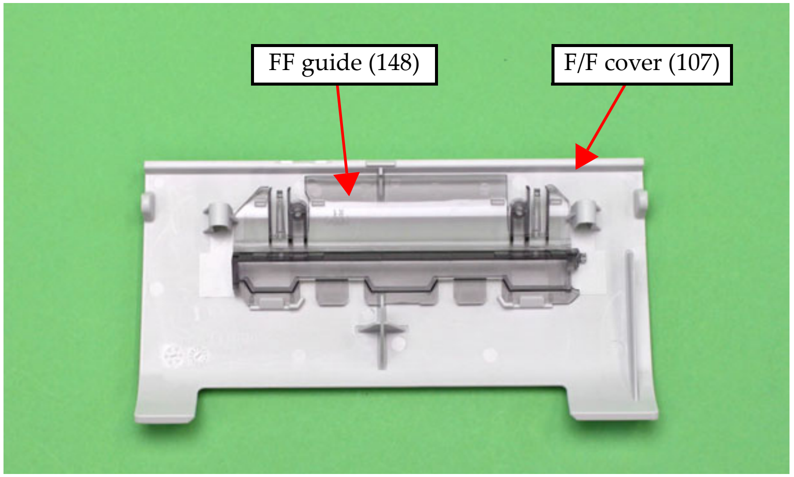
Follow the steps below to disassemble the product.
For assembly, reverse the steps. Be sure to follow the instructions given in the places where lubrication or adjustment is required.

## *F/F Cover*

1. Open the F/F cover (107).
2. Slightly warp the F/F cover (107) in the middle and release the two positioning holes on the F/F cover (107) from the dowels on the rear case assembly (104), and remove the F/F cover (107).

Assembly

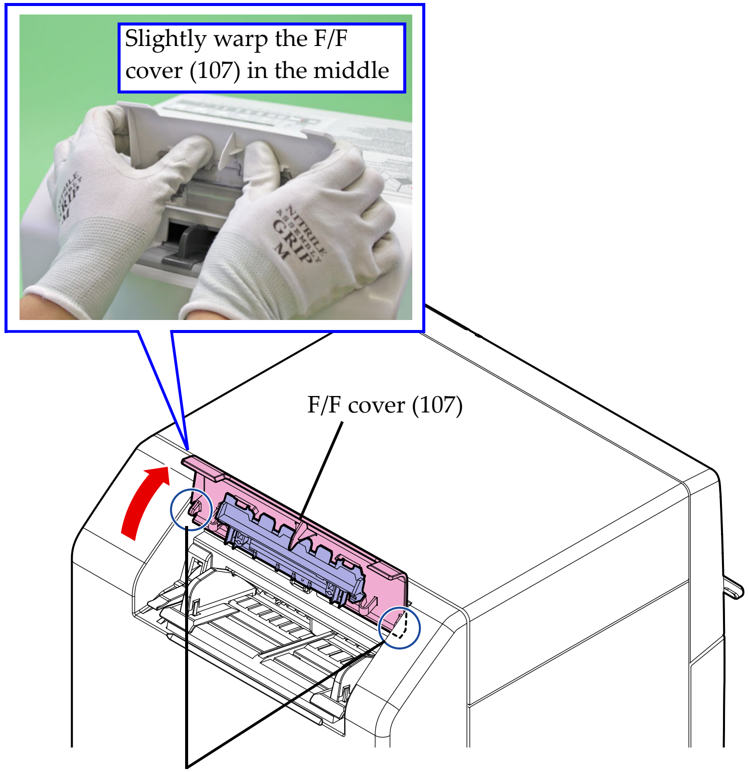
The FF guide (148) is mounted on the F/F cover (107). If it is removed, attach it referring to the figure below.



Adjustment

Adjustments must be carried out after any of the following part have been replaced.

☐ page 207, " F/F cover."



Positioning holes on F/F cover (107) and dowels on rear case assembly (104)

**Figure 5-2. Removing the F/F cover (107)**

## Right Case

1. Open the IC cover assembly (113).
2. Remove the screw that secures the right case (106).

   A) C.B.S-TITE SCREW,3 x 6 one piece (Ref.# S01)

3. Slide the right case (106) to the front side of the printer to remove it.

**Assembly**

When installing the right case (106), follow the steps below.

1. Align the grooves on the right case (106) and the rear case assembly (104).
2. Align the hooks on the right case (106) with the groove on the lower case assembly (109) and slide the right case (106) upward, then align the section B on the right case (106) with the groove on the upper case assembly (103).
3. Secure the right case (106) with the screw.

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 207, " Rear case assembly."

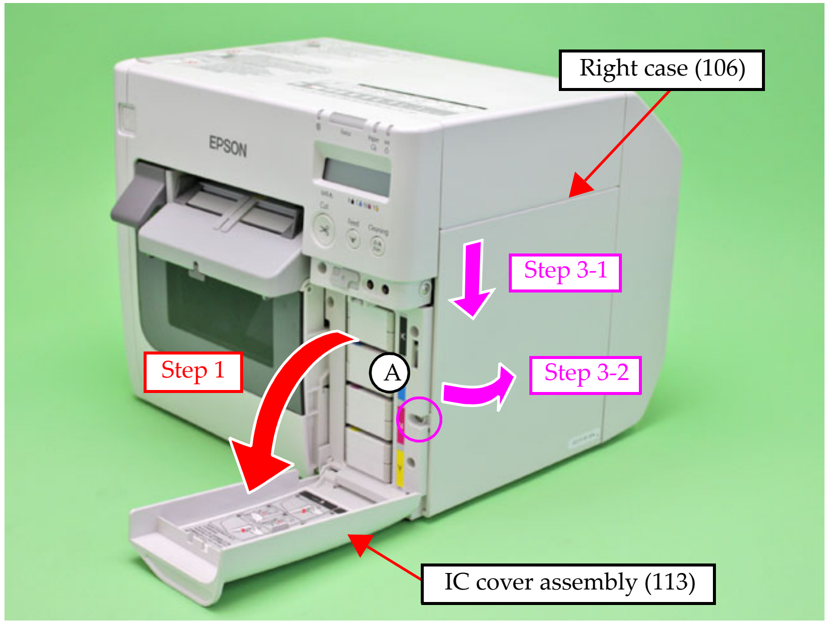

Right case (106)
Step 3-1
Step 1
A
Step 3-2
IC cover assembly (113)

Figure 5-3. Removing the right case (106)

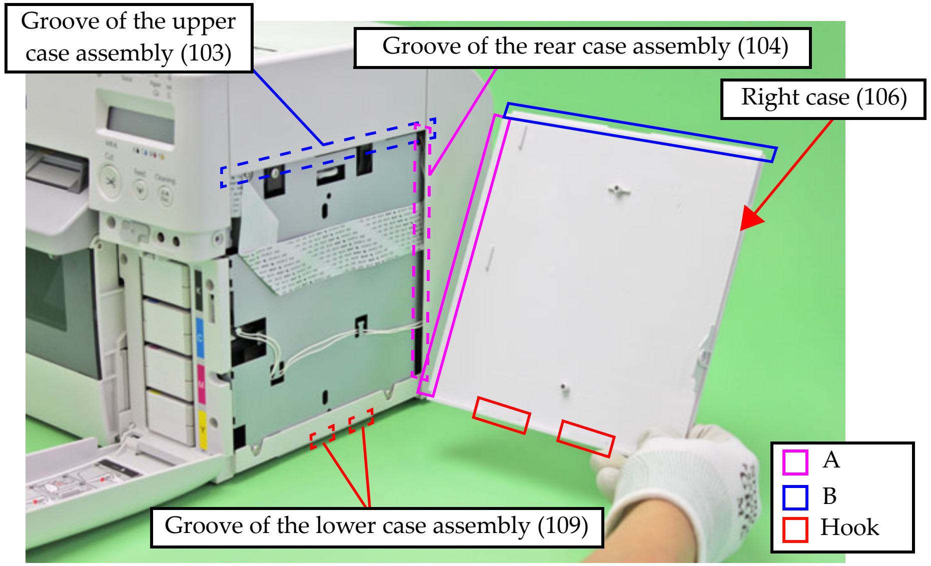

Groove of the upper case assembly (103)
Groove of the rear case assembly (104)
Right case (106)
A
B
Hook
Groove of the lower case assembly (109)

Figure 5-4. Assembling the right case (106)

## *Left Case / M/B Cover*

1. Open the M/B cover (142).
2. Remove the screw that secures the left case (105), and remove the left case (105) and the M/B cover (142).

   A) C.B.S-TITE SCREW,3 × 6 one piece (Ref.# S01)
3. Remove the wire band (102) from the left case (105), and remove the left case (105).
4. Remove the wire band (102) from the M/B cover (142) in the direction of the arrow, and remove the M/B cover (142).

Assembly

When installing the left case (105), follow the steps below.

1. Attach the wire band (102) on the M/B cover (142).
2. Set the wire band (102) on the left case (105).
3. Align the section A on the left case (105) with the groove on the rear case assembly (104).
4. Align the hook on the left case (105) with the groove on the lower case assembly (109) and slide the left case (105) upward, then align the section B on the left case (105) with the groove on the upper case assembly (103).
5. Secure the left case (105) with the screw.

Adjustment

Adjustments must be carried out after any of the following parts have been replaced.

☐ page 206, " M/B cover."

☐ page 207, " Left case."

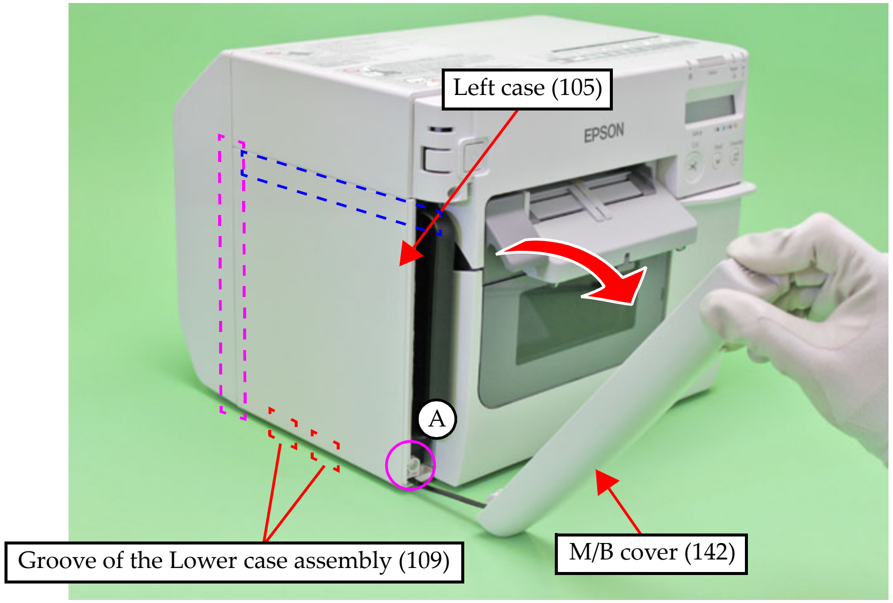


**Figure 5-5. Removing the left case (105) / the M/B cover (142) (1)**

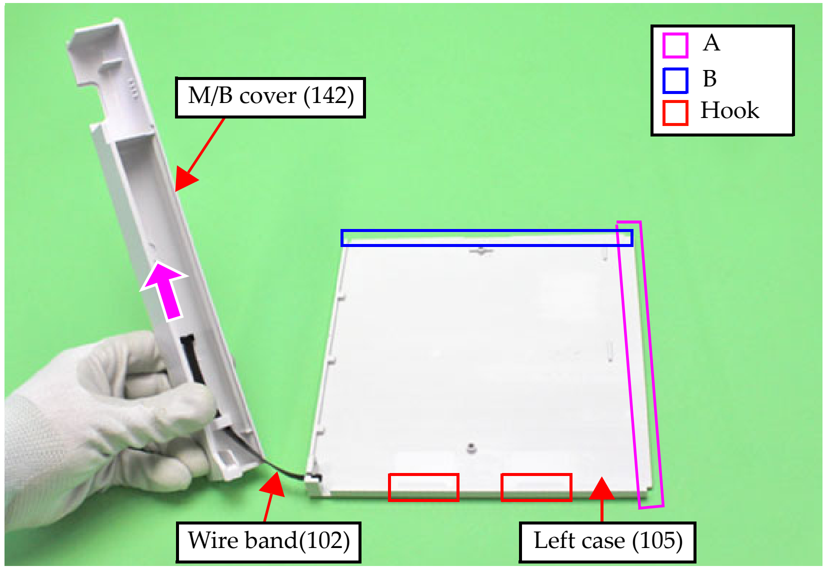


**Figure 5-6. Removing the left case (105) / the M/B cover (142) (2)**

## *Front Paper Guide Assembly / Fixed Blade*

1. Open the roll paper cover.
2. Remove two screws that secure the front paper guide assembly (111), and remove the front paper guide assembly (111).

   A) C.B.S-TITE SCREW,3 × 6 two pieces (Ref.# S01)

3. Remove the fixed blade (534) and fixed blade spring (535).

**CAUTION**

Be careful not to get injured with the sharp edges of the fixed blade (534).

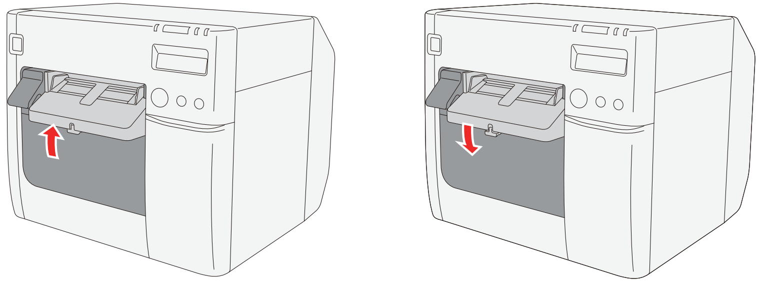
**Assembly**

☐ When installing the fixed blade (534), follow the steps below.

1. Align the cutouts in the fixed blade (534) with the two ribs on the roll paper cover.
2. Align the fixed blade spring (535) with the dowel on the roll paper cover, and attach it; then, secure the fixed blade (534).

☐ After installing the front paper guide assembly (111), make sure that the lock of the paper feed guide operates normally.

- ■ When locked: the paper guide is secured.
- ■ When unlocked: the paper guide can move left and right to adjust the paper width.



Locked

Unlocked

Figure 5-7. Lock of the paper feed guide

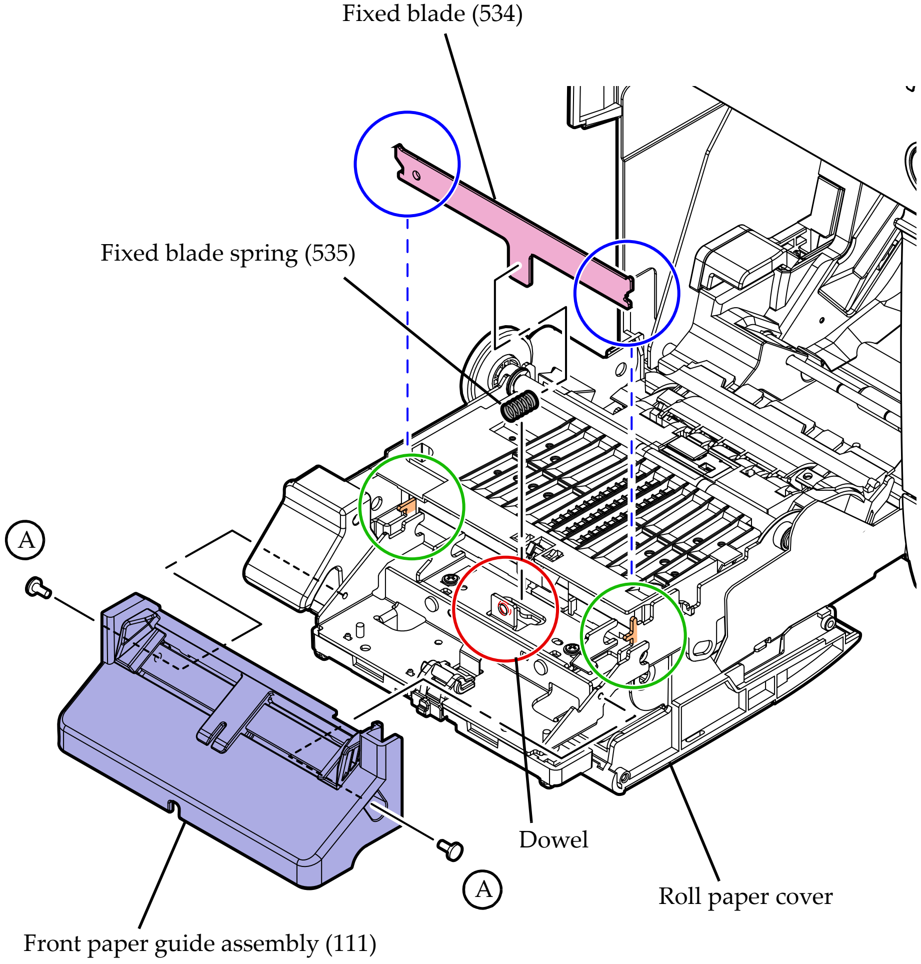


**Figure 5-8. Removing the front paper guide assembly (111) / the fixed blade (534)**

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Front paper guide assembly."

☐ page 206, " Fixed blade."

## Roll Paper Cover Sub Assembly

1. Remove the front paper guide assembly (111). (Page 124)
2. Remove the two earth screws that secure the roll paper cover assembly (0002).

   A) EARTH SCREW,3 × 6 two pieces (Ref.# S03)
3. Pull out the roll paper cover assembly (0002) in the direction of the arrow, and remove it from the platen frame unit.

> **Assembly** When installing the roll paper cover assembly (0002), align the two positioning holes in the roll paper cover assembly (0002) with the two dowels on the platen frame unit.

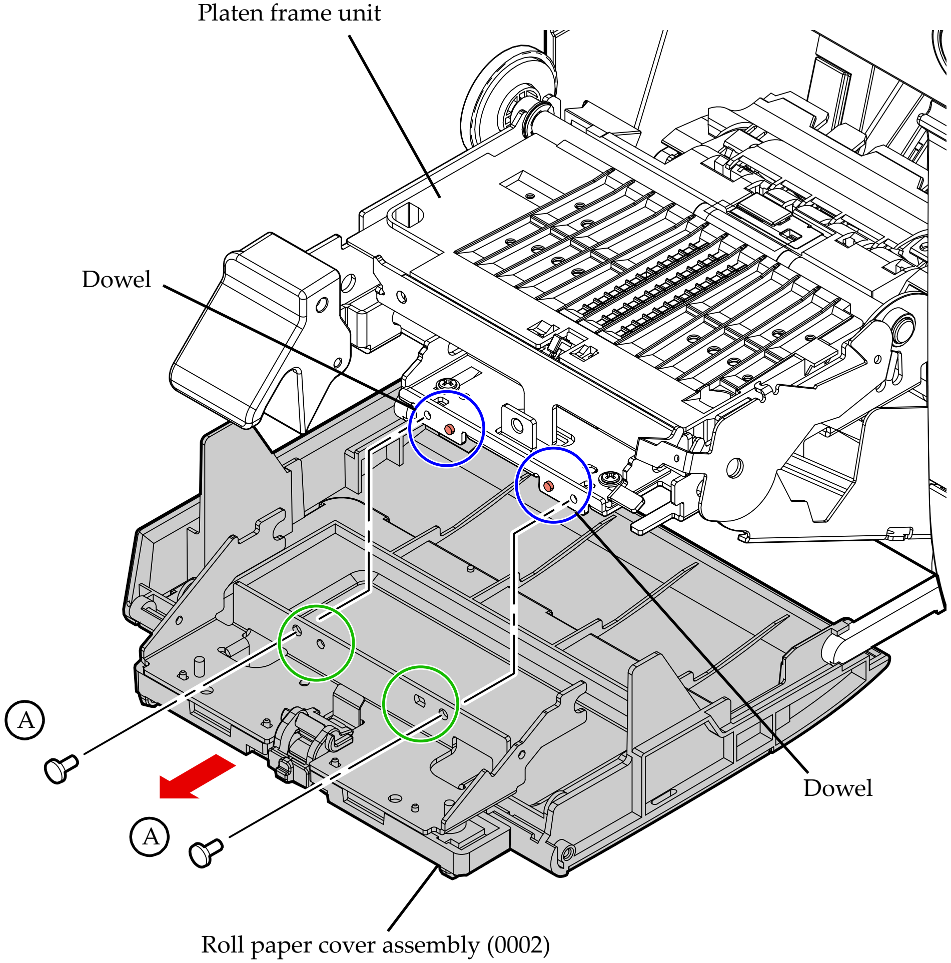


**Figure 5-9. Removing the roll paper cover sub assembly (129) (1)**

4. Close the platen frame unit.
5. Remove the roll paper cover sub assembly (129) from the roll paper cover guide (147).
6. Remove the E-ring, and remove the roll paper cover shaft (0004) and the paper width adjust plate (132) from the roll paper cover sub assembly (129).

   B) E-RING,2.5: one piece (Ref.# E05)

**Assembly** When installing the roll paper cover sub assembly (129), align the two dowels of the roll paper cover guide (147) with the two grooves in the roll paper cover guide (147).

**Adjustment** Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Roll paper cover sub assembly."

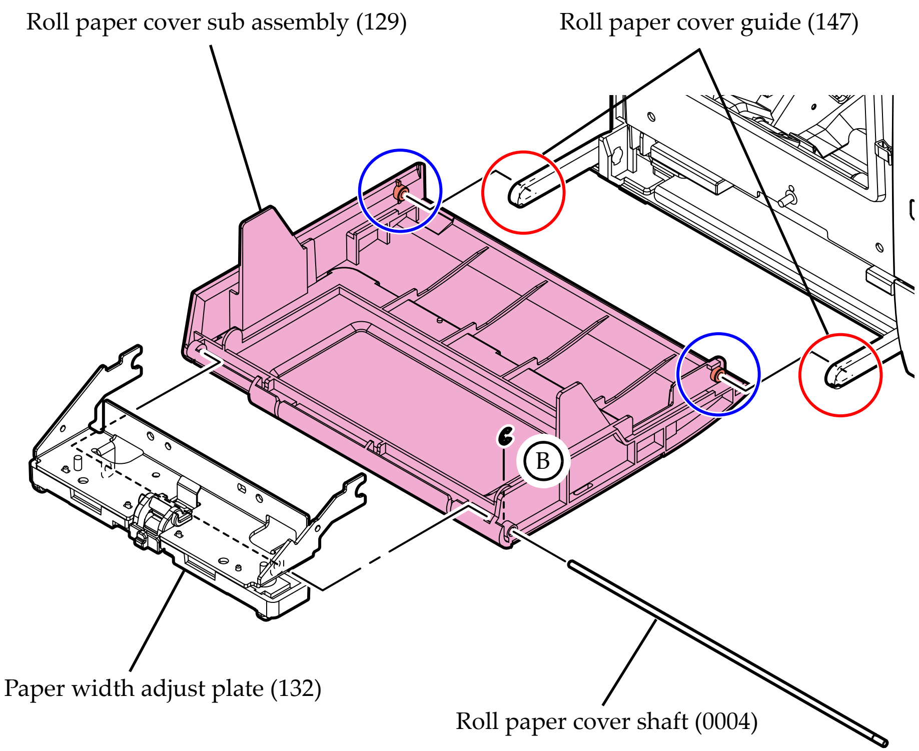

Roll paper cover sub assembly (129)
Roll paper cover guide (147)
B
Paper width adjust plate (132)
Roll paper cover shaft (0004)

**Figure 5-10. Removing the roll paper cover sub assembly (129) (2)**

## Paper Feed Shaft Assembly

1. Open the roll paper cover.
2. Remove the two E-rings inside the paper feed shaft assembly (513), and remove the paper feed shaft assembly (513).

   A) E-RING,5: two pieces (Ref.# E07)
3. Remove the paper feeding roller bearing (502) from the paper feed shaft assembly (513).

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Paper feed shaft assembly."

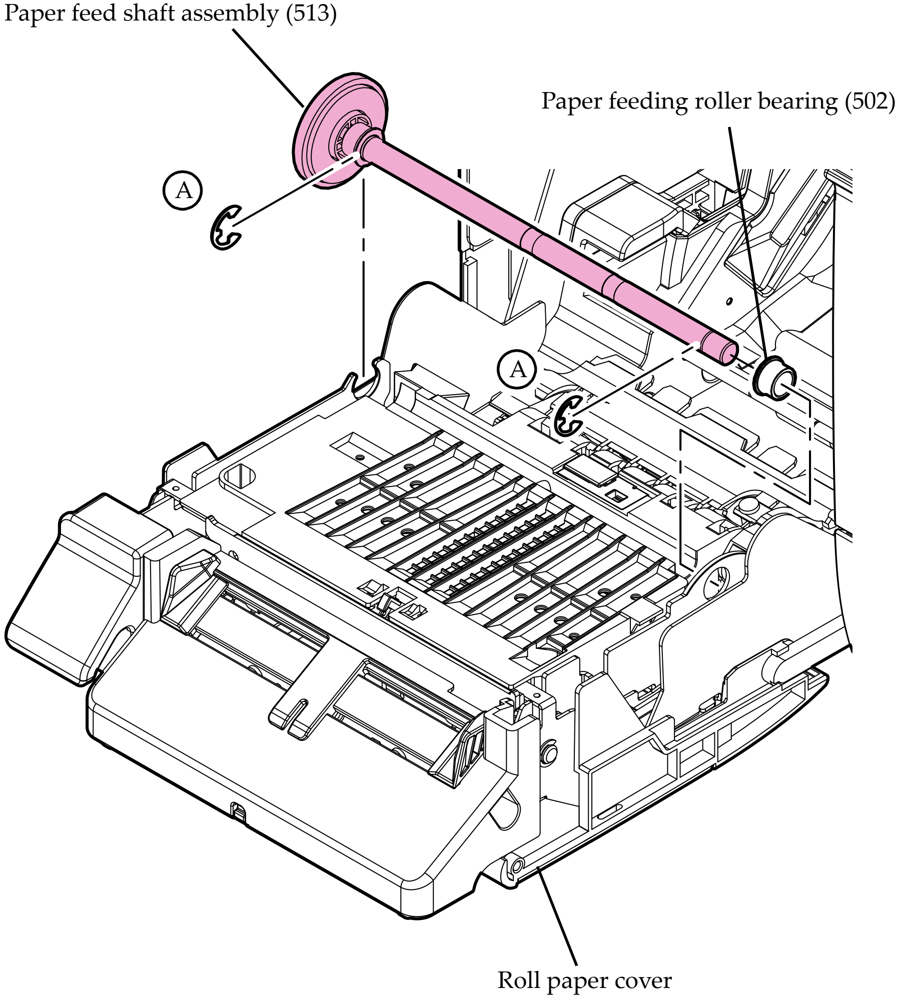

Paper feed shaft assembly (513)
Paper feeding roller bearing (502)
A
A
Roll paper cover

**Figure 5-11. Removing the paper feed shaft assembly (513)**

## Roll Paper Guide Film

1. Remove the paper feed shaft assembly (513). (Page 127)
2. Remove the front paper guide assembly (111). (Page 124)
3. Remove the roll paper cover sub assembly (129). (Page 125)
4. Remove the screw that secures the roll paper guide film (541).

| | | |
|---|---|---|
| A) C.P.S-TITE(P4)SCREW,3 × 6 | one piece | (Ref.# S24) |

5. Pull the platen sub unit (511) toward you.
6. Remove the left spring and right spring from the platen shaft.
7. Remove the two lock lever springs (0037) from both ends of the platen sub unit (511).
8. Remove the two E-rings and two washers that secure the shafts of the left link lever subset assembly and right link lever subset assembly.

| | | |
|---|---|---|
| B) E-RING,3: | two pieces | (Ref.# E04) |
| C) P.W. 4.3 × 0.8 × 8: | two pieces | (Ref.# W02) |

9. Remove the shafts the left link lever subset assembly and right link lever subset assembly from the platen frame unit.

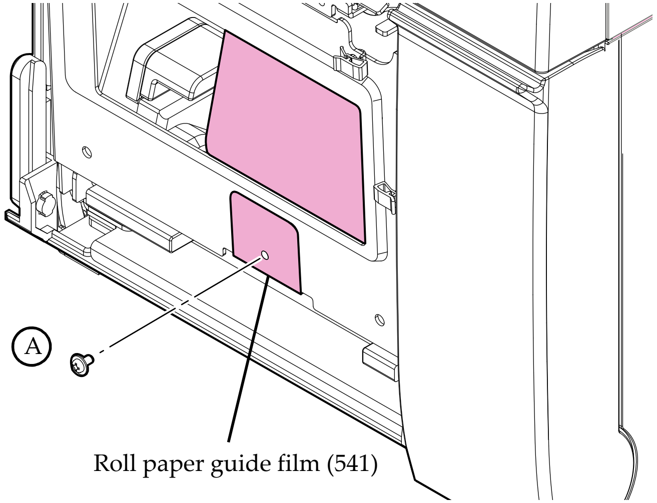

A
Roll paper guide film (541)

**Figure 5-12. Removing the roll paper guide film (541) (1)**

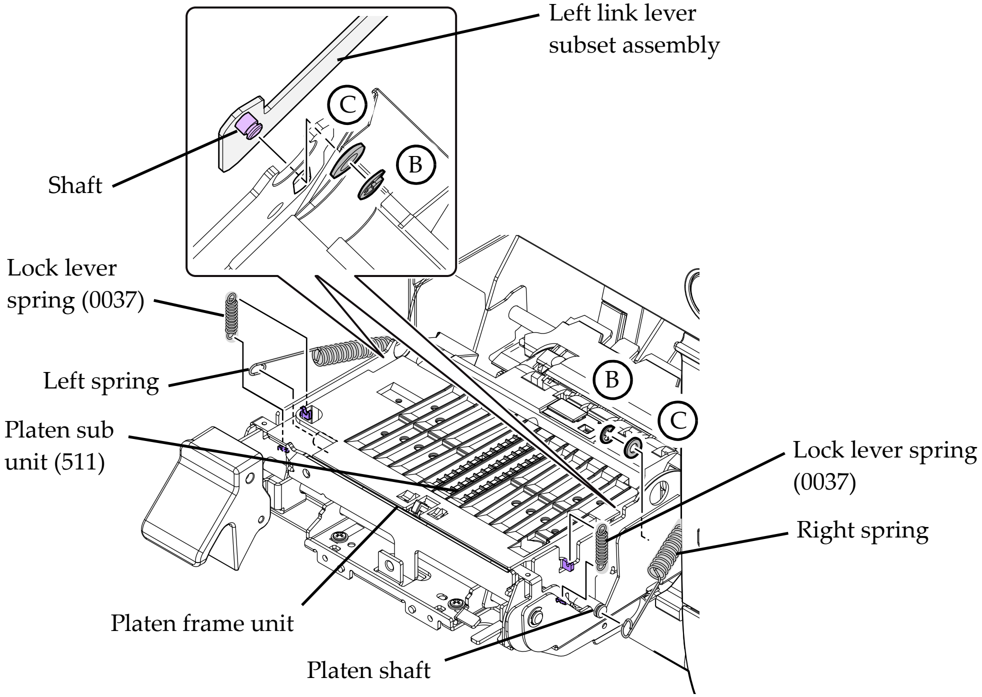

Left link lever subset assembly
C
B
Shaft
Lock lever spring (0037)
Left spring
Platen sub unit (511)
B
C
Lock lever spring (0037)
Right spring
Platen frame unit
Platen shaft

**Figure 5-13. Removing the roll paper guide film (541) (2)**

10. Pull up the platen sub unit (511) in the direction of the arrow.

**Check**

In the next step, be sure to use a short-shaft screw driver.

11. Remove the two screws and two washers that secure the roll paper guide film (541), and remove the roll paper guide film (541).

| | | |
|---|---|---|
| D) C.B.S-TITE SCREW,2.5 × 5 | two pieces | (Ref.# S20) |
| E) P.W. 3 × 0.5 × 6: | two pieces | (Ref.# W01) |

**Assembly**

When attaching the roll paper guide film (541), fold the two tips of it at an acute angle on the positions shown below.

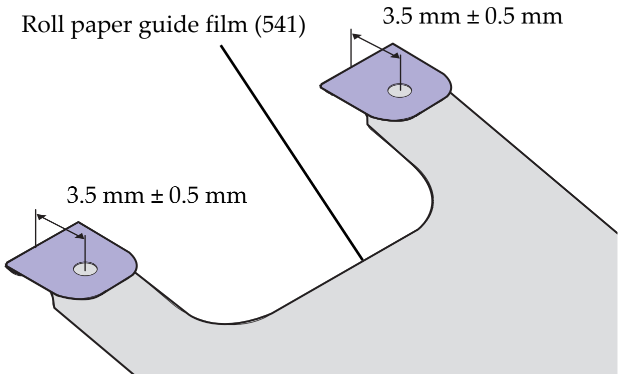

Roll paper guide film (541)
3.5 mm ± 0.5 mm
3.5 mm ± 0.5 mm

**Figure 5-14. Installing the roll paper guide film (541)**

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Roll paper guide film."

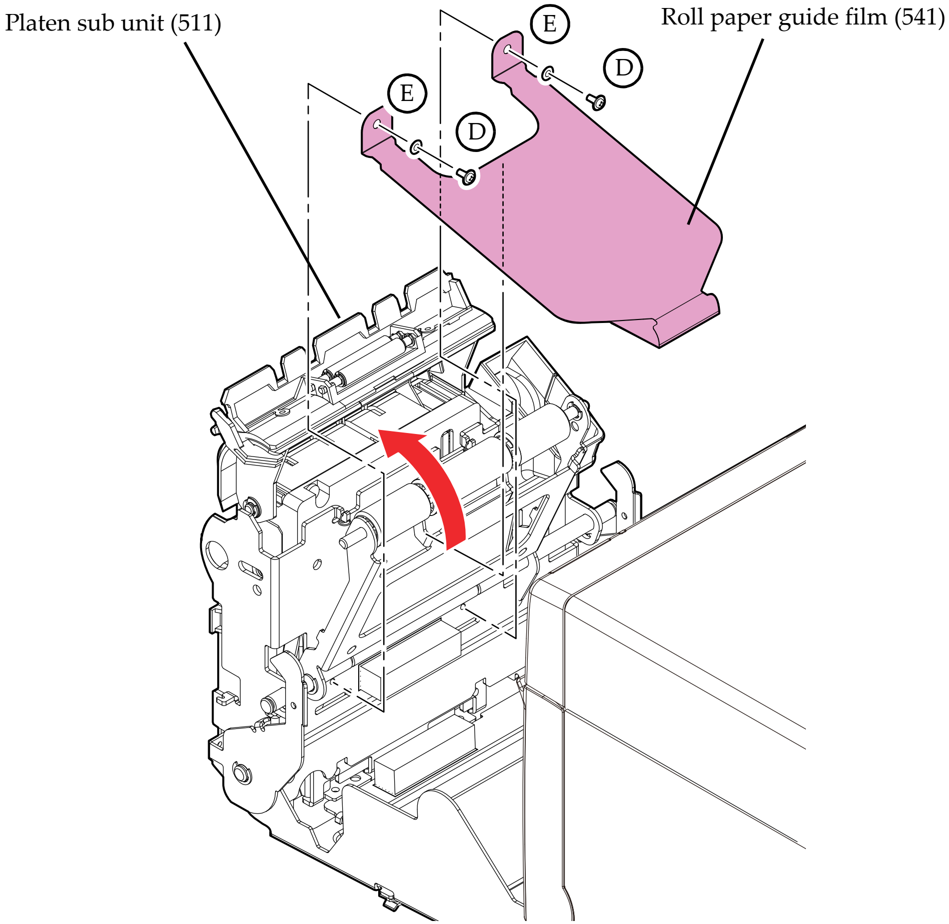

Platen sub unit (511)
E
D
E
D
Roll paper guide film (541)

**Figure 5-15. Removing the roll paper guide film (541) (3)**

## *Rear Case Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove two screws that secure the rear case assembly (104).

   A) C.B.S-TITE SCREW,3 × 6 two pieces (Ref.# S01)

3. Open the rear case assembly (104) in the direction of the arrow to release the two hooks on the bottom, and remove the rear case assembly (104).

**Assembly** Make sure to align the two hooks of the rear case assembly (104) with the square holes in the lower case assembly (109), before securing them with the screws.

**Adjustment** Adjustments must be carried out after any of the following part have been replaced.

☐ page 207, " Rear case assembly."

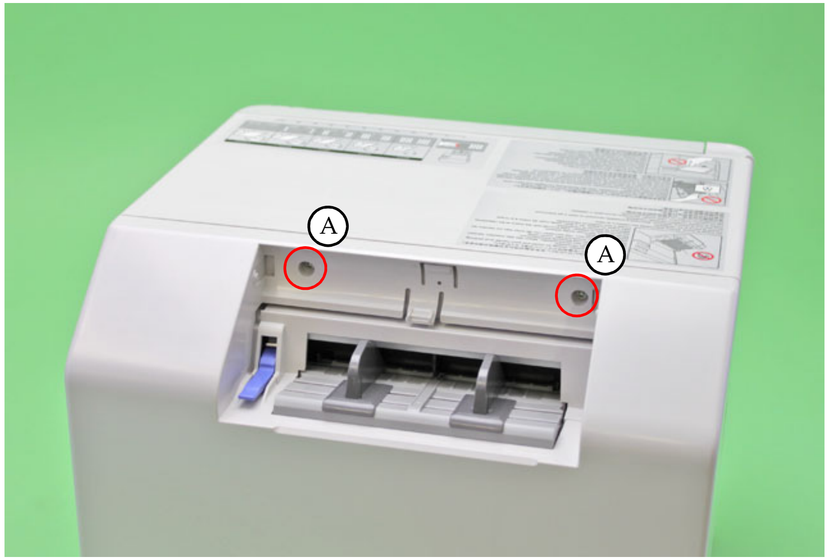


**Figure 5-16. Removing the rear case assembly (104) (1)**

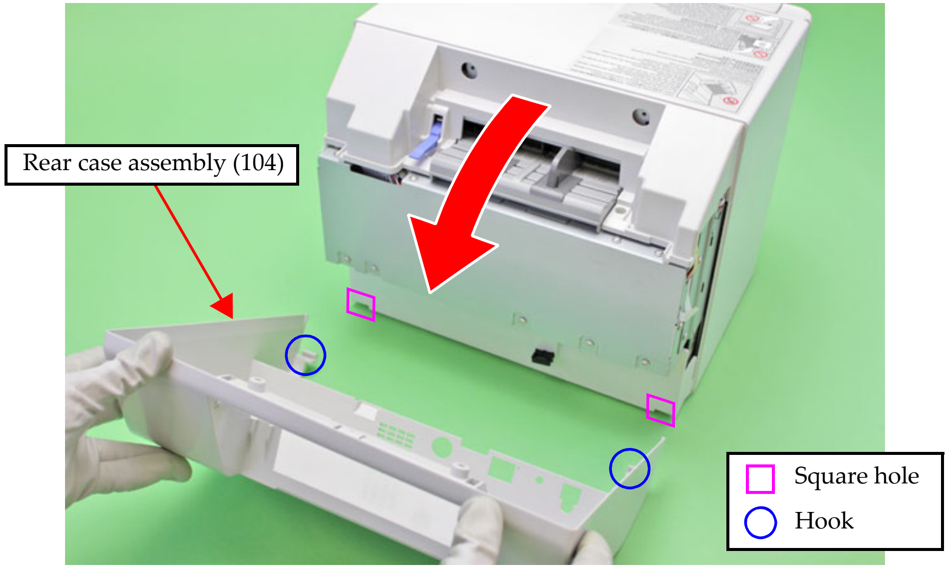


**Figure 5-17. Removing the rear case assembly (104) (2)**

## *Upper Case Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the two screws that secure the upper case assembly (103), and slide the upper case assembly (103) to the rear and lift it to remove it.

   A) C.B.S-TITE SCREW,3 × 6 two pieces (Ref.# S01)

4. Press and hold the upper case assembly (103) at the point shown in the figure, slide the upper case assembly (103) slightly backward and lift the case to remove it.

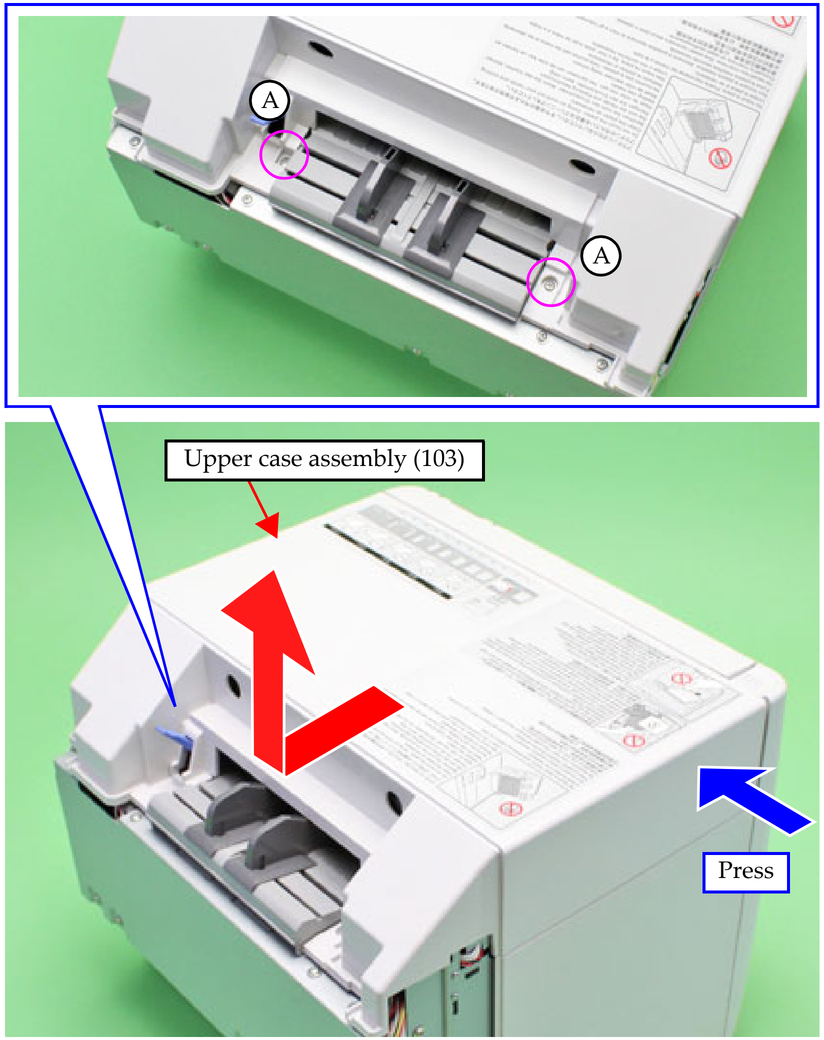


**Figure 5-18. Removing the upper case assembly (103)**

## *Circuit Board Cover*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the eight earth screws that secure the circuit board cover (0006), and remove the circuit board cover (0006).

A) EARTH SCREW,3 × 6 eight pieces (Ref.# S03)

*Assembly*

☐ When installing the circuit board cover (0006), align the positioning hole in the circuit board cover (0006) with the dowel on the circuit board frame (0018).

☐ Make sure no lead wires are caught under the printer.

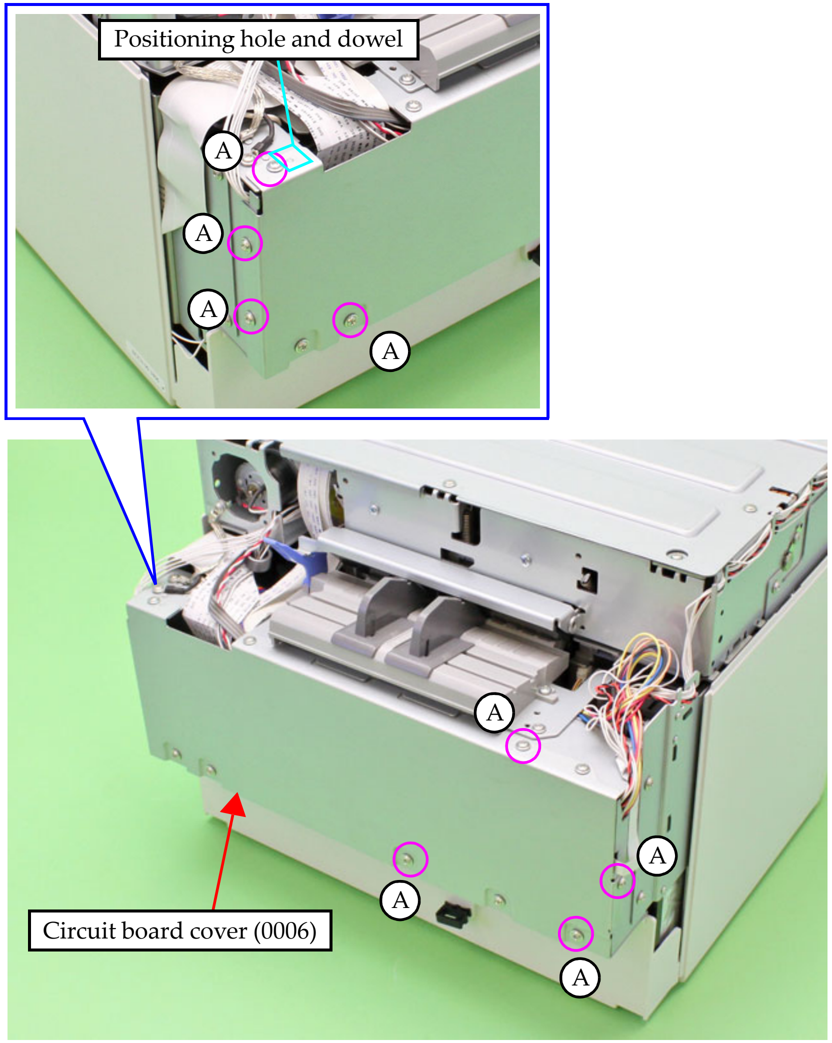


**Figure 5-19. Removing the circuit board cover (0006)**

## I/C Cover Holder Assembly / IC Cover assembly

1. Remove the right case (106). (Page 122)
2. Open the roll paper cover.
3. Open the IC cover assembly (113).
4. Release the hook of the IC cover assembly (113) from the I/C cover holder assembly (144), and remove the IC cover assembly (113).

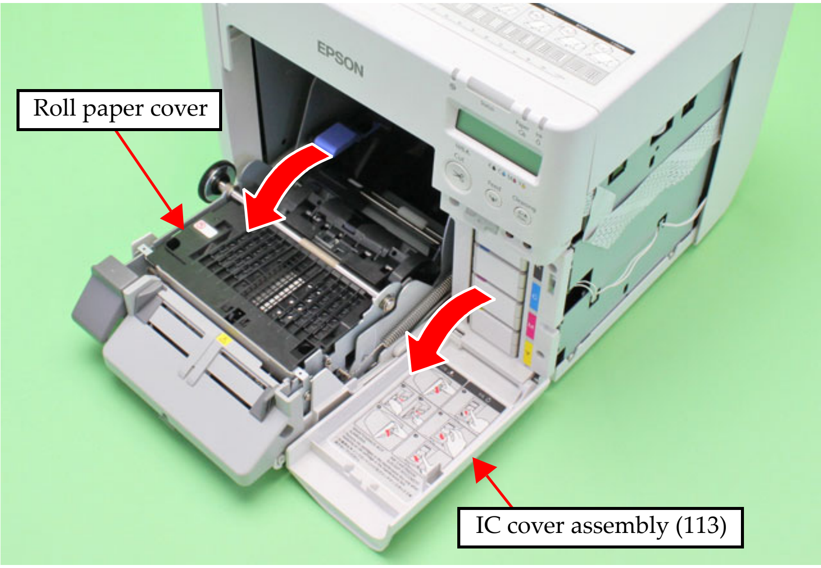

Roll paper cover
IC cover assembly (113)

**Figure 5-20. Removing the IC cover assembly (113) (1)**

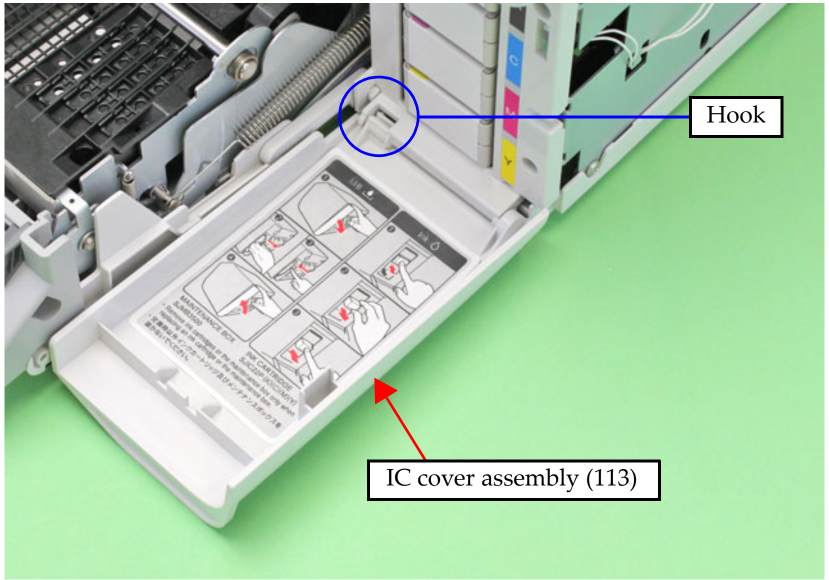

Hook
IC cover assembly (113)

**Figure 5-21. Removing the IC cover assembly (113) (2)**

5. Remove the three screws that secure the I/C cover holder assembly (144).

   A) C.B.S-TITE SCREW,3 × 6 three pieces (Ref.# S01)

6. Release the hook on the I/C cover holder assembly (144) from the hole on the base frame, and pull the I/C cover holder assembly (144) slightly forward.

**CAUTION**

The I/C cover detector is mounted on the I/C cover holder assembly (144). Therefore, if pull the I/C cover holder assembly (144) strongly too far, the lead wire of the I/C cover detector may be damaged. So be careful.

7. Disconnect the I/C cover lead wire from the I/C cover detector.

8. Pull open the I/C cover holder assembly (144) 90 degrees toward you, and align the hole on the I/C cover holder assembly (144) with the section A on the roll paper cover guide, then remove the I/C cover holder assembly (144).

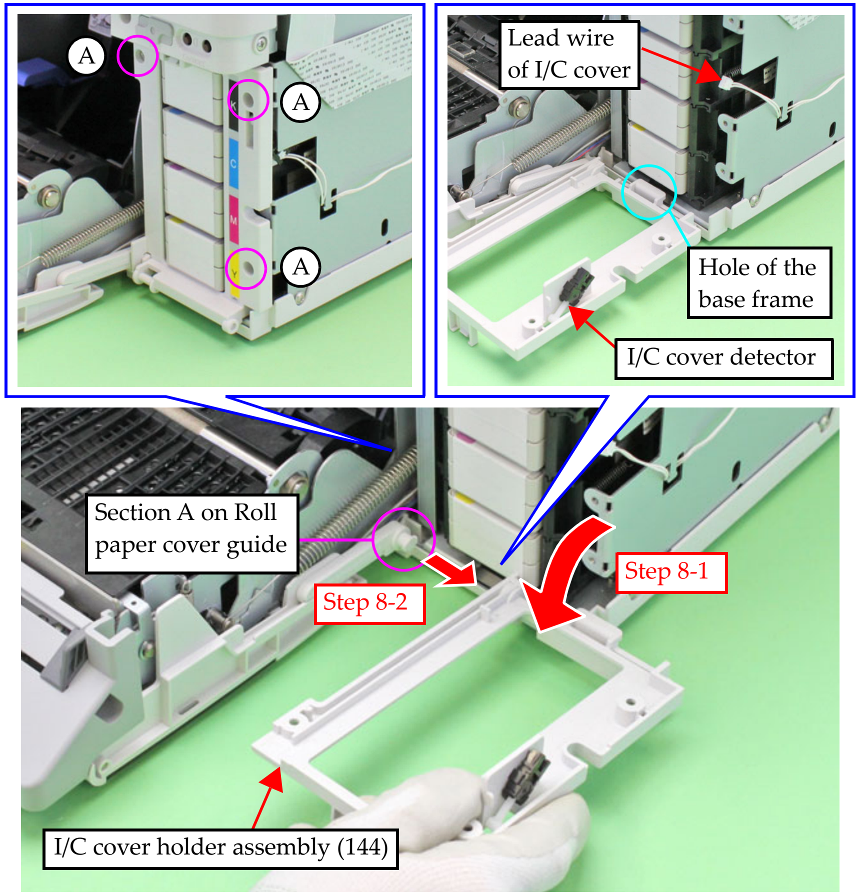

A
A
A
Lead wire of I/C cover
Hole of the base frame
I/C cover detector
Section A on Roll paper cover guide
Step 8-2
Step 8-1
I/C cover holder assembly (144)

**Figure 5-22. Removing the I/C cover holder assembly (144)**

**Check**

The lead wire of the I/C cover is included in the I/C cover holder assembly (144) as an ASP. Therefore, when replacing the I/C cover holder assembly (144), select from the procedures below according to the damage of the lead wire of the I/C cover.

☐ If the lead wire of the I/C cover is not broken

Remove the lead wire of the I/C cover from the new I/C cover holder assembly (144), and connect the currently installed lead wire of the I/C cover to the I/C cover holder assembly (144).

☐ If the lead wire of the I/C cover is broken

Remove the lead wire as follows.

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case. (Page 122)
4. Remove the left case (105)/M/B cover (142). (Page 123)
5. Remove the front paper guide assembly. (Page 124)
6. Remove the roll paper cover sub assembly (129). (Page 125)
7. Remove the lower case assembly. (Page 170)
8. Remove the upper case assembly. (Page 131)
9. Remove the circuit board cover. (Page 138)
10. Disconnect the lead wire of the I/C cover from the connector (CN27) on the main board. (page 202, " Main Circuit Board Unit.")
11. Release the lead wire of the I/C cover from the cutout on the right strengthen plate (0029). (Page 184 Step15.)
12. Release the lead wire of the I/C cover from the hook on the pressure pump unit (551). (Page 184 Step16.)
13. Release the lead wire of the I/C cover from the cutout and two hooks on the right frame (0038), and remove the lead wire of the I/C cover. (Page 185 Step6.)

**Adjustment**

Adjustments must be carried out after any of the following parts have been replaced.

☐ page 207, " IC cover."

## *AID Circuit Board Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the circuit board cover (0006). (Page 132)
5. Disconnect the FFCs from the five connectors (CN5, CN8, CN9, CN10, CN11, CN22) on the main circuit board unit (201).
6. Disconnect the AID circuit lead wire (554) from the connector (CN27) on the main circuit board unit (201).
7. Remove the three screws that secure the AID cover frame (0040) and remove the AID cover frame (0040).

   A) EARTH SCREW,3 × 6 three pieces (Ref.# S03)
8. Remove the screw that secures the earth wire (white) of the IS pump unit (518) to the AID circuit board assembly (556), and remove the earth wire (white) of the IS pump unit (518).

   B) EARTH SCREW,3 × 6 one piece (Ref.# S03)
9. Disconnect the AID circuit lead wire (554) from the connector on the AID circuit board assembly (556).

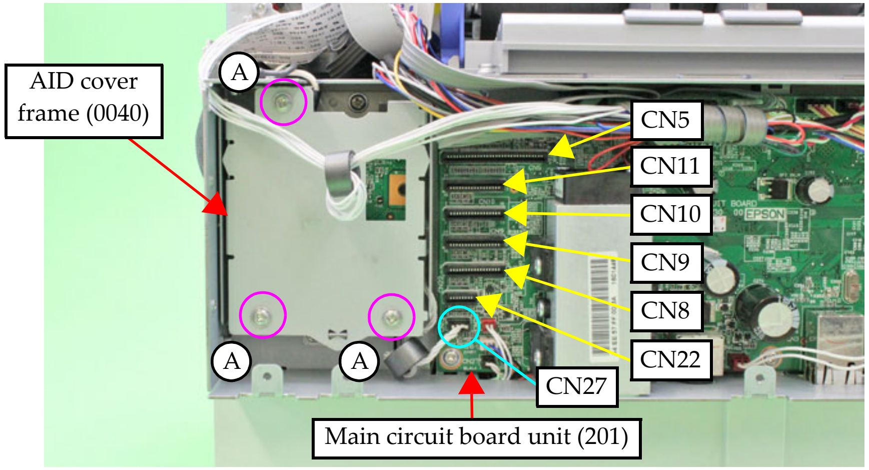

AID cover frame (0040)
A
A
A
CN5
CN11
CN10
CN9
CN8
CN22
CN27
Main circuit board unit (201)

**Figure 5-23. Removing the AID circuit board assembly (556) (1)**

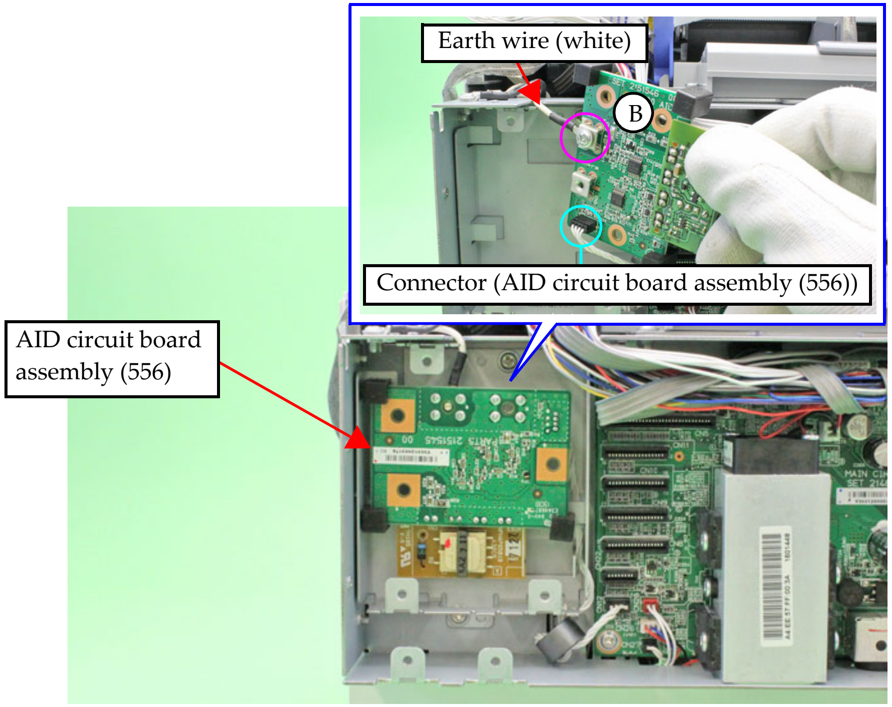

Earth wire (white)
B
Connector (AID circuit board assembly (556))
AID circuit board assembly (556)

**Figure 5-24. Removing the AID circuit board assembly (556) (2)**

10. Remove the three AID circuit board holder (552) from the AID circuit board assembly (556), and remove the AID circuit board assembly (556).
11. Release the AID circuit lead wire (554) from the two hooks of the AID cover frame (0040), and remove the AID circuit lead wire (554).
12. Remove the ferrite core (146) from the AID circuit lead wire (554).

Assembly

☐ When replacing the AID circuit lead wire (554), transfer the ferrite core from the old one, and insert the ferrite core in the position specified in (Figure 5-26).

☐ Route the AID circuit lead wire (554) through the two hooks on the AID cover frame (0040) as shown in (Figure 5-26).

Adjustment

Adjustments must be carried out after any of the following parts have been replaced.

☐ page 206, " AID circuit board assembly."

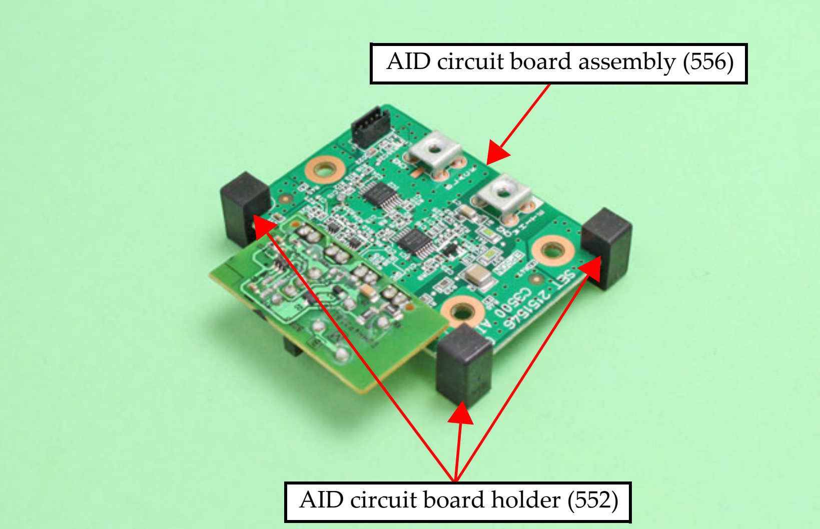

AID circuit board assembly (556)
AID circuit board holder (552)

**Figure 5-25. Removing the AID circuit board assembly (556) (3)**

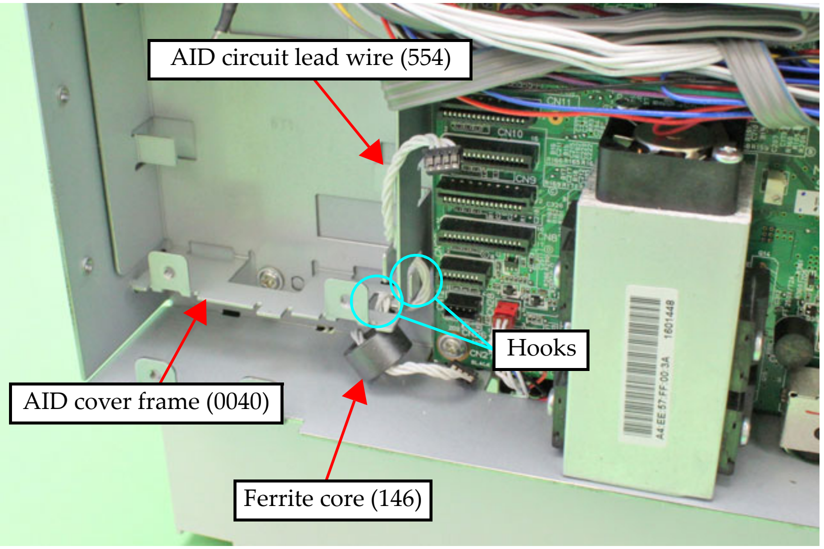

AID circuit lead wire (554)
Hooks
AID cover frame (0040)
Ferrite core (146)

**Figure 5-26. Removing the AID circuit lead wire (554)**

## *Main Circuit Board Unit*

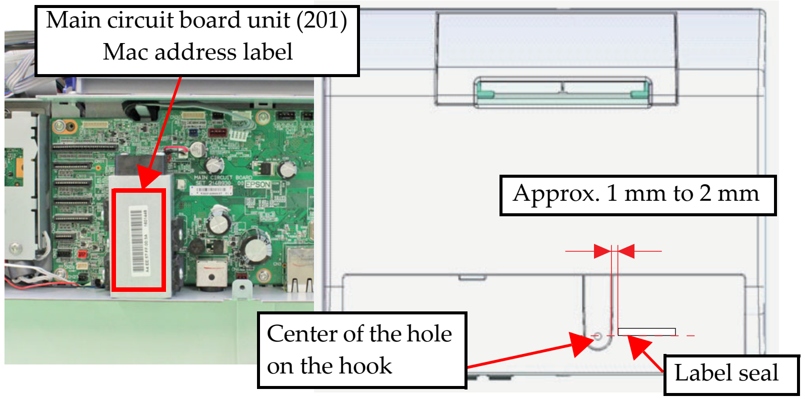
1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the circuit board cover (0006). (Page 132)
5. Disconnect the all lead wires and FFCs from connector of the main circuit board unit (201).
6. Remove the seven screws and the screw that secure the main circuit board unit (201), and remove the main circuit board unit (201).

| | | |
|---|---|---|
| A) C.B.SCREW,3 × 5 | six pieces | (Ref.# S04) |
| B) C.B.SCREW,3 × 5 | one piece | (Ref.# S04) |

**Assembly**

☐ For routing the lead wire, FFC connected to the main circuit board unit (201), see page 197, " Routing the Cables."

☐ When the main circuit board unit (201) is replaced, the value of the MAC address is changed. Therefore, print the new MAC address value written on the MAC address label on label seals using a label printer or the like, and apply them on the lower case assembly (109) (Page 170). If you cannot find the MAC address, perform "Printing a Status Sheet" (Page 86) to check the MAC address.



**Adjustment**

Adjustments must be carried out after any of the following parts have been replaced.

☐ page 206, " Main circuit board unit (Available data dump)."

☐ page 206, " Main circuit board unit (Unavailable data dump)."

**Check**

Interchangeability between Printer and MAIN CIRCUIT BOARD UNIT [ASP]

Not interchangeable.

Refer to the following table.

| | | Printer<br>TM-C3500/3510/3520 | |
|---|---|---|---|
| | | Current | New<br>Serial number[*3] |
| MAIN CIRCUIT BOARD UNIT (ASP) | Current<br>(Part code: 2175126) | OK | NG[*1] |
| | New Firmware version: WAM31000 or later<br>(Paper code: 2186400 or later) | OK[*2] | OK |

*1 : The current MAIN CIRCUIT BOARD UNIT [ASP] can be used if the firmware is upgraded to WAM31000, and Paper Loading Settings are changed to the same setting as new type with the method below: - Set [Paper loading at roll paper cover close] to “No paper feed for positioning” in PrinterSetting in the printer driver of version 2.0.0.0 or later. (The setting menu is in General tab - Printer Operation Settings - Paper Loading Settings.)

*2: The new MAIN CIRCUIT BOARD UNIT is set to “No paper feed for positioning” when roll paper cover is closed. When replacing the current type MAIN CIRCUIT BOARD UNIT to new type, please announce the change method of technical information No. TIE02963 to the user.

*3: Serial number
TM-C3500(011): U23F012001 or after
TM-C3500(012): U24F018001 or after
TM-C3500(081): U25F007001 or after
TM-C3510(041): U26F007001 or after
TM-C3510(042): WJ3F003001 or after
TM-C3520(061): U27F007001 or after

*4: Reference technical information No. TIE02963

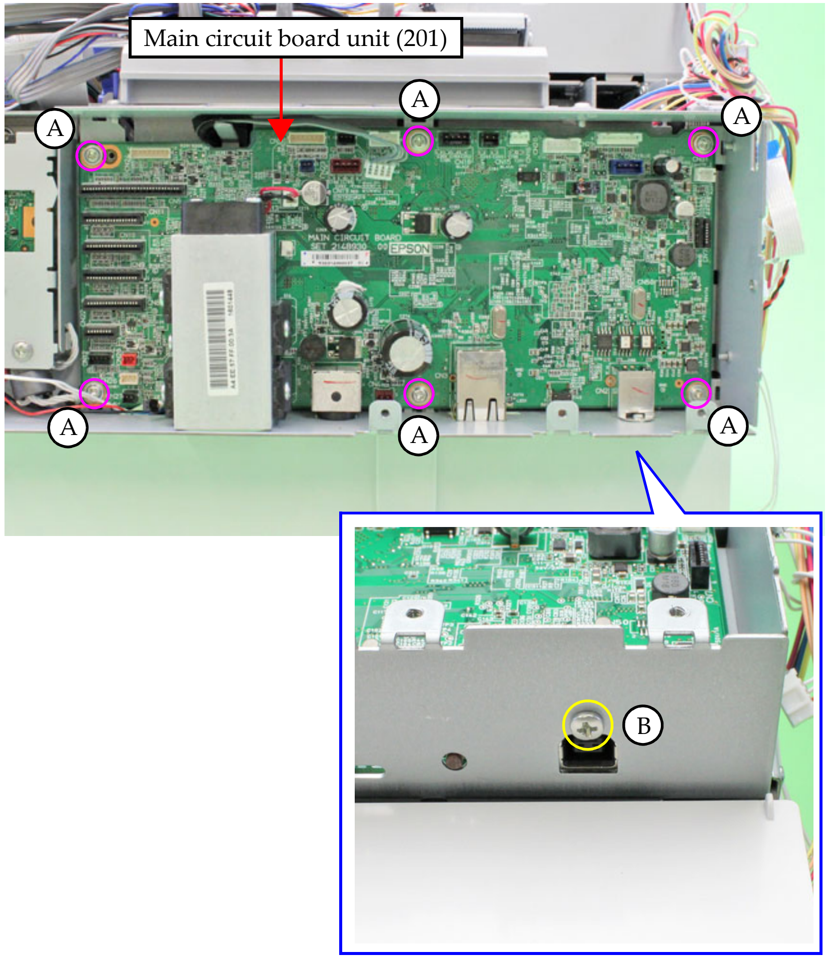


Figure 5-27. Removing the main circuit board unit (201)

## *Circuit Board Frame*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the circuit board cover (0006). (Page 132)
5. Remove the main circuit board unit (201). (Page 138)
6. Remove the AID circuit board assembly (556). (Page 136)
7. Release the acceleration board lead wire (539) from the cutout of the circuit board frame (0018).
8. Peel off the panel board FFC (121) secured with double-sided tape from the circuit board frame (0018).
9. Remove the two earth screws that secure the earth wire assembly,F (145) and the earth wire (black) of the IS pump unit (518) to the circuit board frame (0018).

   | | | |
   |---|---|---|
   | A) EARTH SCREW,3 × 6 | two pieces | (Ref.# S03) |

10. Remove the six earth screws that secure the circuit board frame (0018), and remove the circuit board frame (0018).

   | | | |
   |---|---|---|
   | B) EARTH SCREW,3 × 6 | six pieces | (Ref.# S03) |

**Assembly**

☐ When installing the circuit board frame (0018), align the two positioning holes in the circuit board frame (0018) with the two dowels on the main frame.

☐ When installing the circuit board frame (0018), be careful not to catch the cable of the paper adjustment motor.

☐ When installing the circuit board frame (0018), tighten the screws B indicated in the red circle first.

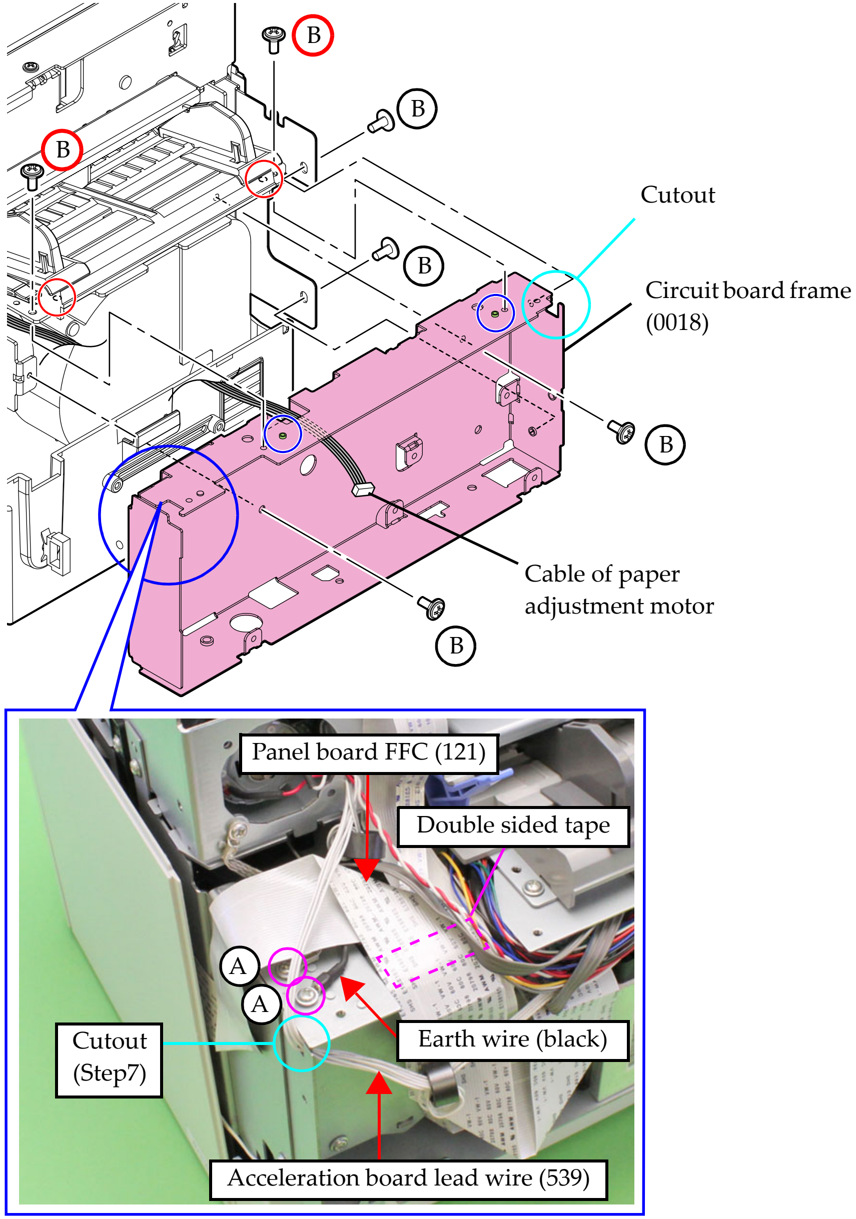

B
B
B
B
B
B
Cutout
Circuit board frame (0018)
Cable of paper adjustment motor
Panel board FFC (121)
Double sided tape
A
A
Earth wire (black)
Cutout (Step7)
Acceleration board lead wire (539)

**Figure 5-28. Removing the circuit board frame (0018)**

## *Top Frame*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the four earth screws that secure the top frame (0007), and remove the top frame (0007).

   A) EARTH SCREW,3 × 6 four pieces (Ref.# S03)

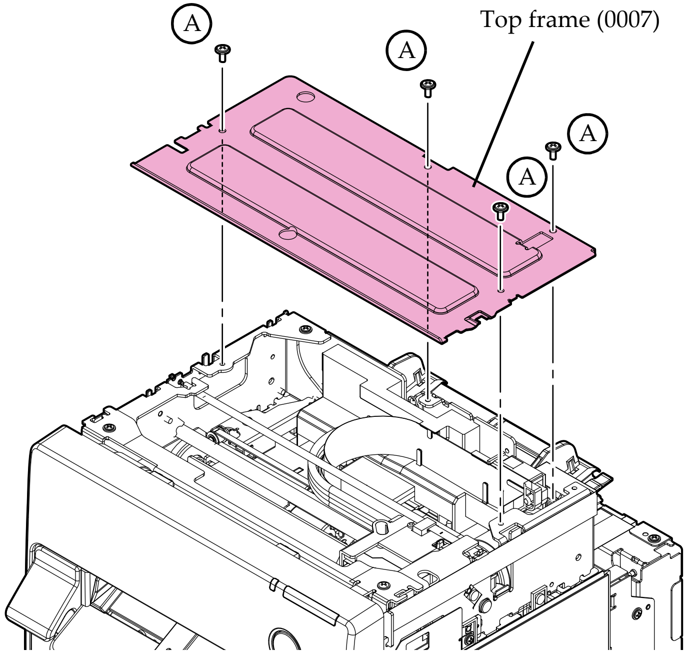


**Figure 5-29. Removing the top frame (0007)**

## *Carriage Scale*

CAUTION

☐ Make sure to hold the carriage scale (130) only by the edges. Never touch the scale surfaces. Also, be careful not to contaminate or scratch the scale surfaces.

☐ When handling the carriage scale (130), make sure not to damage or scratch the carriage scale (130) with the edges of the main frame.

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Release the carriage lock, and move the carriage lock to the center. (Page 120)
6. Release the ink system side of the carriage scale (130) from the rib on the frame.
7. Remove the scale fixed spring (131) from the rib of the frame and the carriage scale (130).
8. Remove the carriage scale (130) from the encorder board assembly (525).

Assembly

When installing the carriage scale (130), route the carriage scale (130) through the slit in the encoder board assembly (525).

Adjustment

Adjustments must be carried out after any of the following parts have been replaced.

☐ page 206, " Carriage scale."

☐ page 206, " Scale fixed spring."

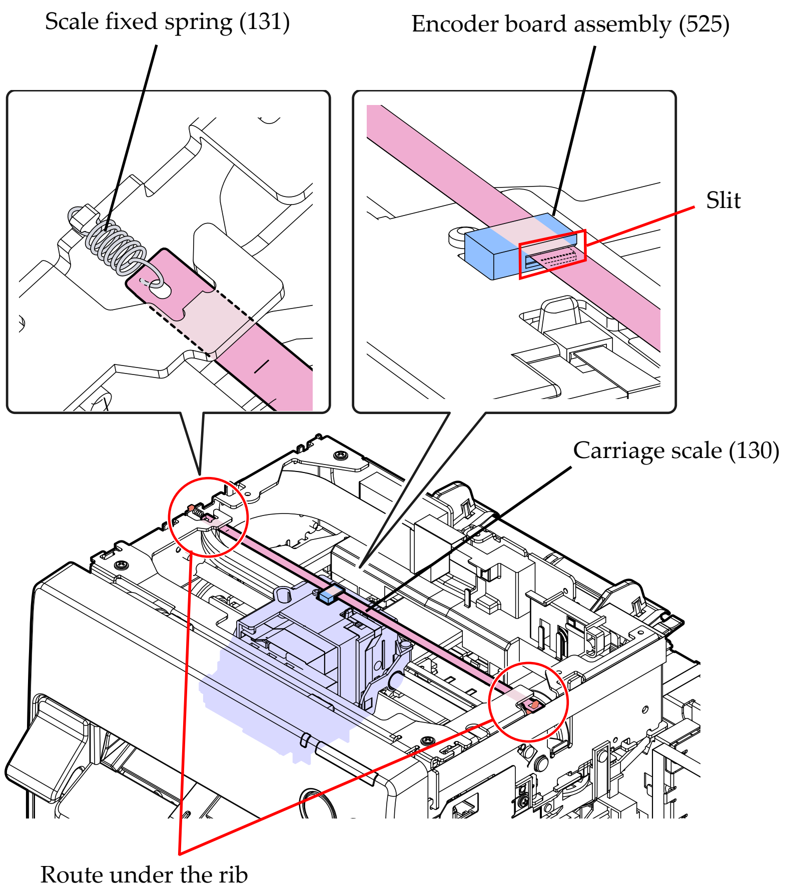


**Figure 5-30. Removing the carriage scale (130)**

## *Rear F/F Paper Guide Sub Unit*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the circuit board cover (0006). (Page 132)
5. Remove the main circuit board unit (201). (Page 138)
6. Remove the AID circuit board assembly (556). (Page 136)
7. Remove the circuit board frame (0018). (Page 140)
8. Remove the top frame (0007). (Page 141)
9. Remove the FFC guide (0033). (Page 148)
10. Release the carriage lock, and move the carriage lock to the center. (Page 120)
11. Remove the eight earth screws that secure the carriage unit (0005).

    A) EARTH SCREW,3 × 6 eight pieces (Ref.# S18)

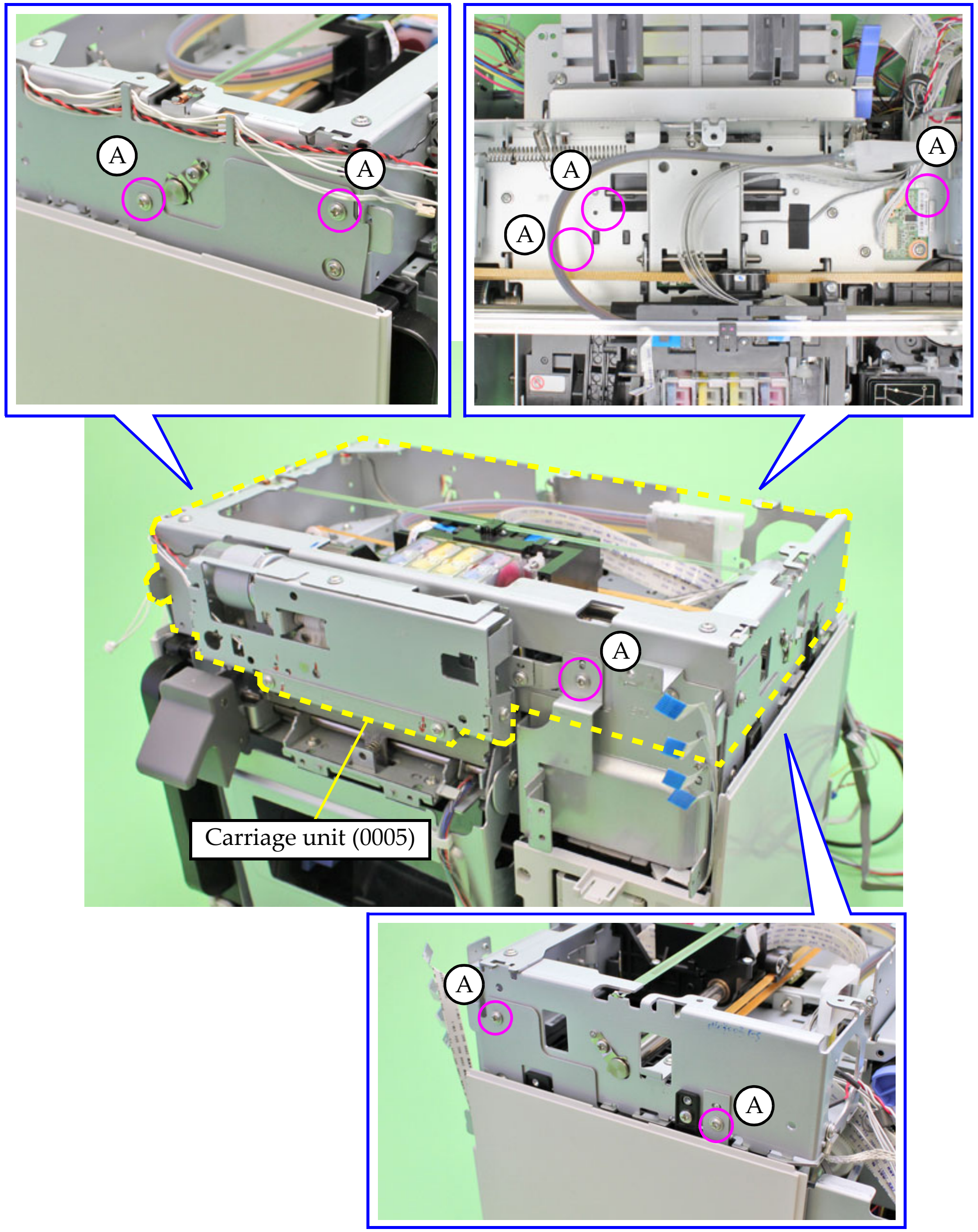


**Figure 5-31. Removing the rear F/F paper guide sub unit (508) (1)**

12. Release the lead wire of the rear F/F paper guide sub unit (508) from the mini clamp (504).
13. Remove the two screws that secure the rear F/F paper guide sub unit (508).

    B) C.B.S-TITE SCREW,3 × 6 two pieces (Ref.# S10)
14. Lift the carriage unit (0005) at least 10 mm, and remove the rear F/F paper guide sub unit (508).

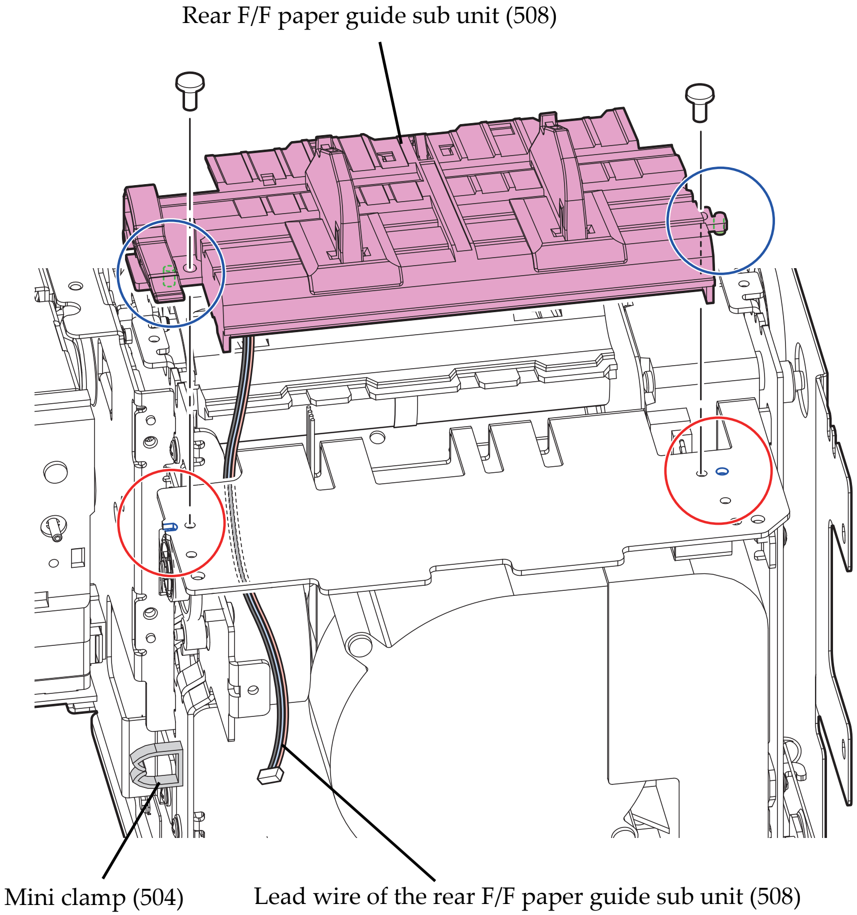

Rear F/F paper guide sub unit (508)
Mini clamp (504)
Lead wire of the rear F/F paper guide sub unit (508)

Figure 5-32. Removing the rear F/F paper guide sub unit (508) (2)

15. Peel off acetate tape (W10 mm × L10 mm ± 2 mm), and release the lead wire of the rear F/F paper guide sub unit (508) from the two ribs and the two grooves of the rear F/F paper guide sub unit (508).

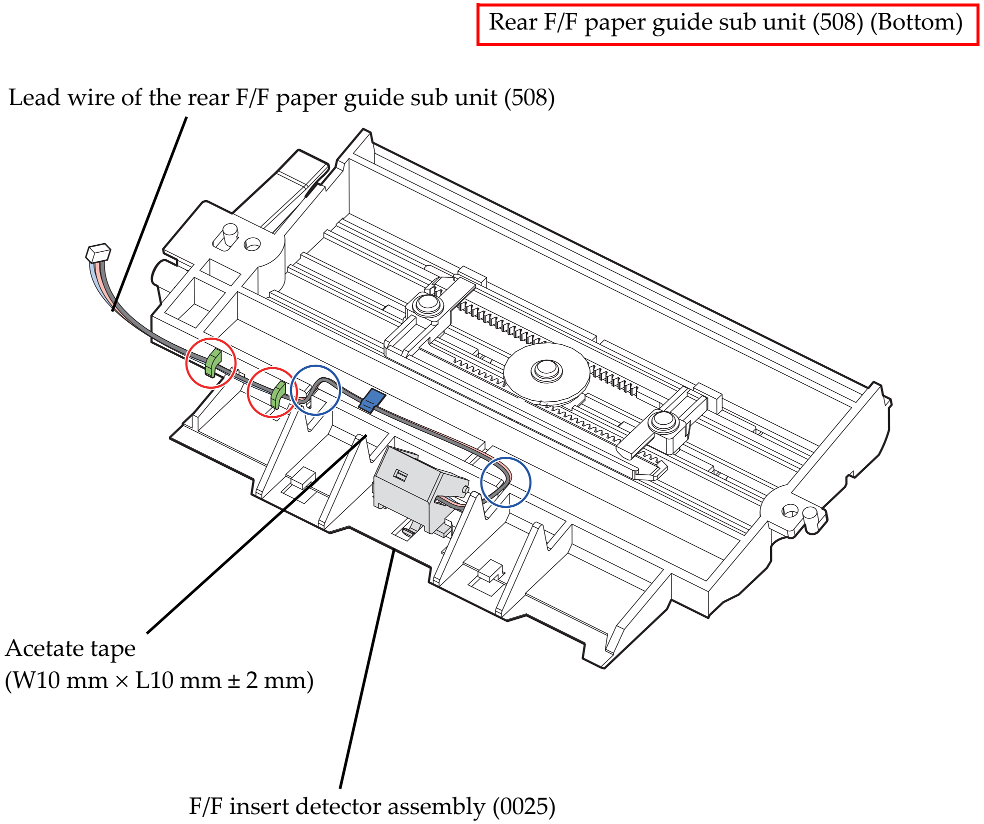

Rear F/F paper guide sub unit (508) (Bottom)
Lead wire of the rear F/F paper guide sub unit (508)
Acetate tape
(W10 mm × L10 mm ± 2 mm)
F/F insert detector assembly (0025)

**Figure 5-33. Removing the F/F insert detector assembly (0025) (1)**

Assembly

When installing the F/F insert detector assembly (0025), route the lead wire of the rear F/F paper guide sub unit (508) through the two hooks and two grooves of the rear F/F paper guide sub unit (508), and secure it with acetate tape (W10 mm × L10 mm ± 2 mm). (Figure 5-33)

16. Rotate the F/F insert detector assembly (0025) in the direction of the arrow to release the hook from lead wire side, and remove the F/F insert detector assembly (0025).

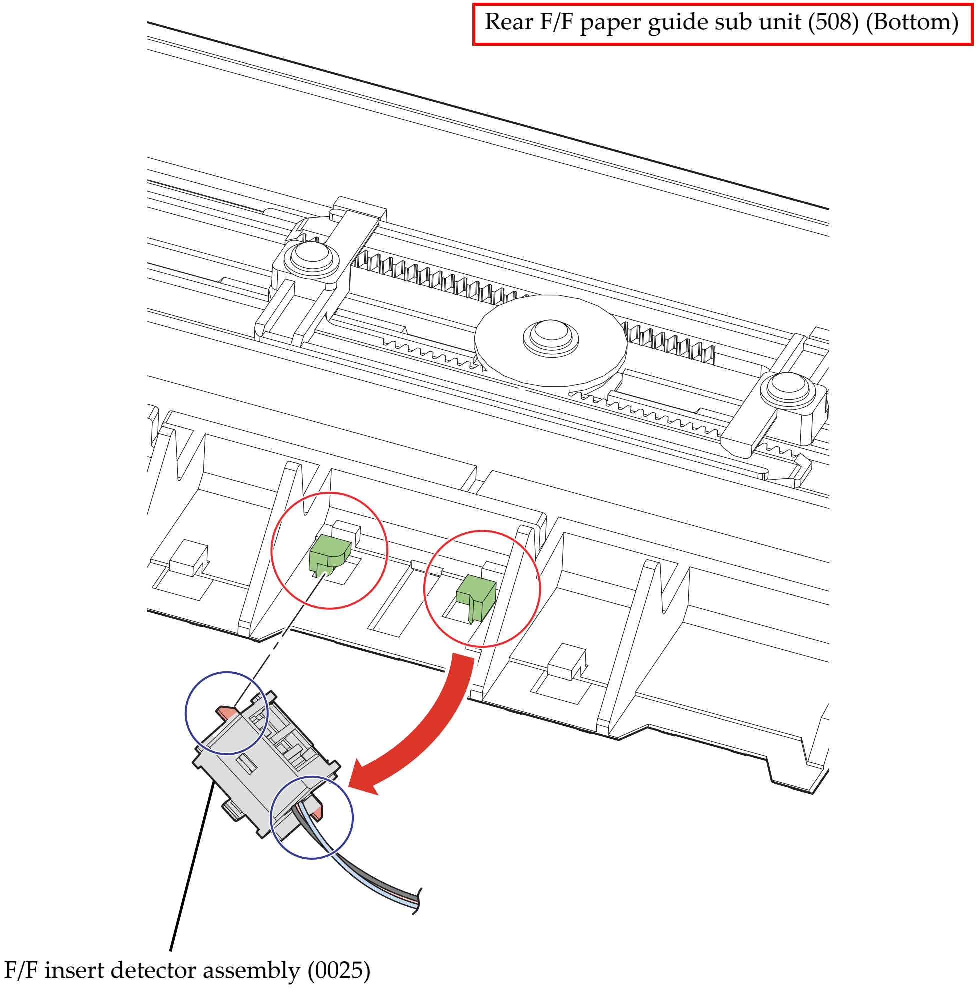

Rear F/F paper guide sub unit (508) (Bottom)
F/F insert detector assembly (0025)

**Figure 5-34. Removing the F/F insert detector assembly (0025) (2)**

17. Remove the paper detector lever (0026) and the paper detector spring (0027) from the F/F insert detector assembly (0025).
18. Release the hook of the paper detector holding plate (0028), and remove the F/F insert detector sub assembly (509).

Assembly

When assembling the F/F insert detector assembly (0025), be sure to attach the ends of the paper detector spring (0027) onto the hook of the paper detector lever (0026) and the groove of the F/F insert detector assembly (0025). (Figure 5-35)

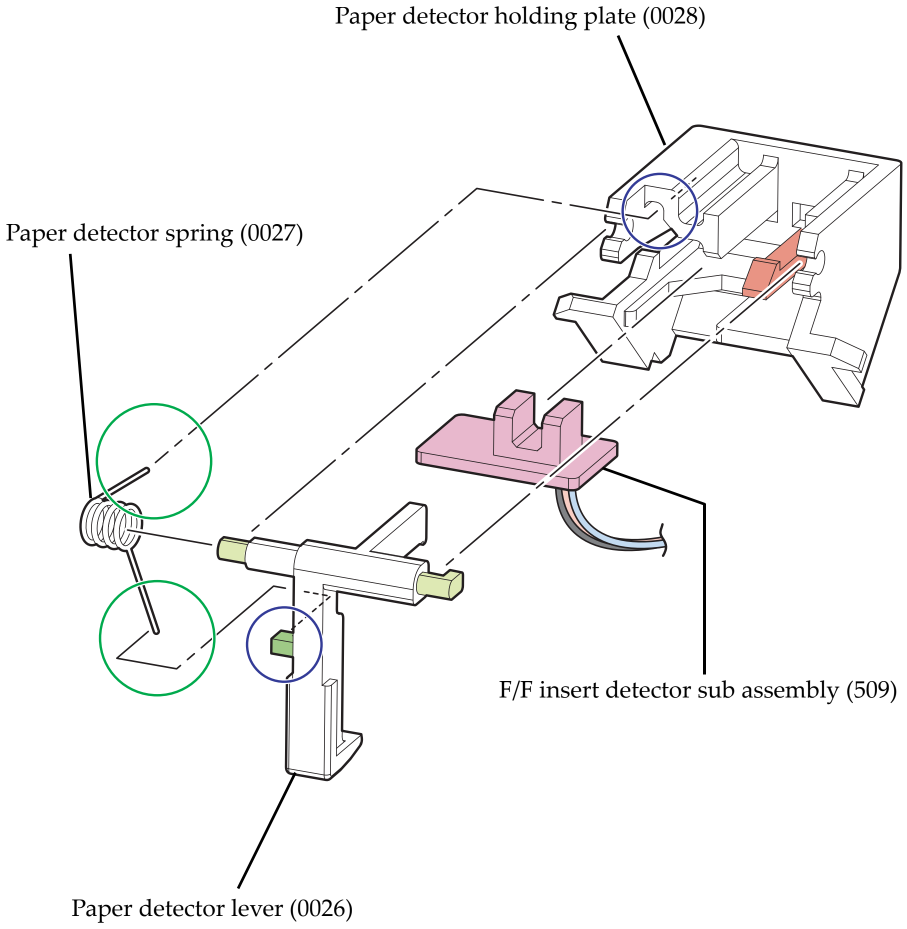

Paper detector holding plate (0028)
Paper detector spring (0027)
F/F insert detector sub assembly (509)
Paper detector lever (0026)

**Figure 5-35. Removing the rear F/F paper guide sub unit (508) (3)**

Assembly

☐ When installing the rear F/F paper guide sub unit (508), align the two dowels on the rear F/F paper guide sub unit (508) with the two positioning holes in the frame. (Figure 5-32 (Page 144))

☐ When installing the rear F/F paper guide sub unit (508), be sure not to leave any gaps between the rear F/F paper guide sub unit (508) and the frame. (Figure 5-32 (Page 144))

☐ When installing the rear F/F paper guide sub unit (508), route the lead wire of the rear F/F paper guide sub unit (508) inside the frame before routing it through the mini clamp (504).

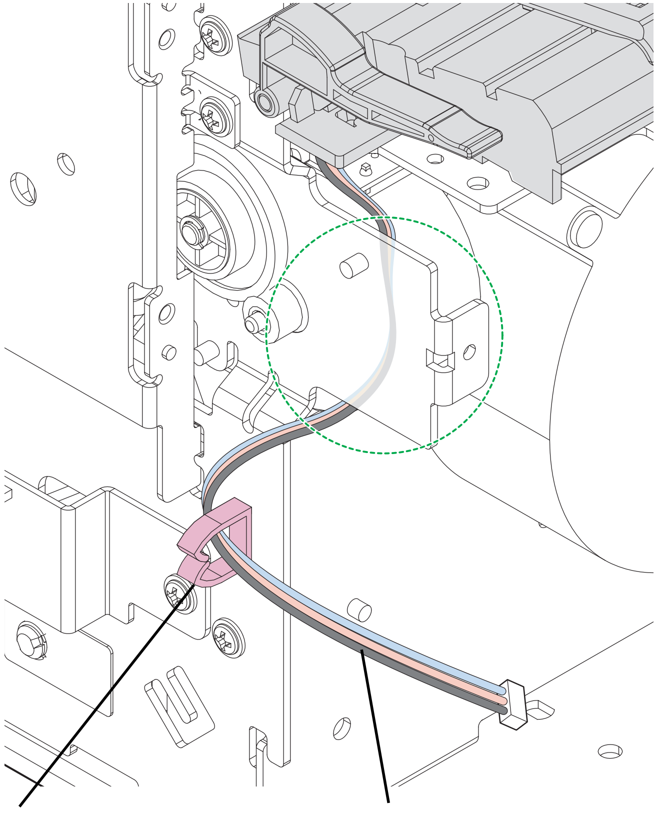


**Figure 5-36. Installing the rear F/F paper guide sub unit (508)**

Adjustment

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Rear F/F paper guide sub unit."

## *FFC Guide*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Remove the carriage scale (130). (Page 142)

**CAUTION**

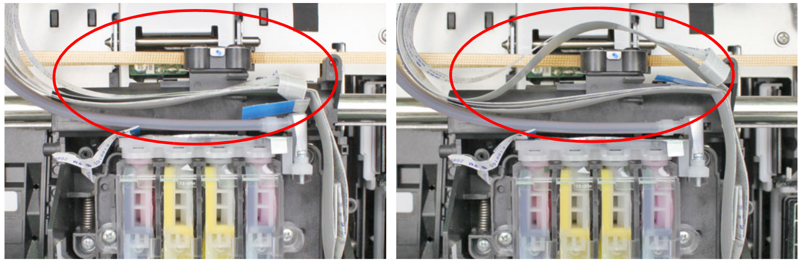
When performing the following step, take care not to damage or fold the FFCs.

6. Release the following the tubes and FFCs from the five hooks of the FFC guide (0033).
   - Ink tube of the valve head assembly (501)
   - Head FFC A (529)
   - Head FFC B (530)
   - Encoder detector FFC (531)
7. Remove the three screws that secure the FFC guide (0033), and remove the FFC guide (0033).

   A) C.B.P-TITE SCREW,3 × 8 three pieces (Ref.# S12)

**Assembly**

After routing the three FFCs through the five hooks on the FFC guide (0033), confirm that the FFCs near the head are NOT sagging inward.



OK NG

**Figure 5-37. Routing the FFC**

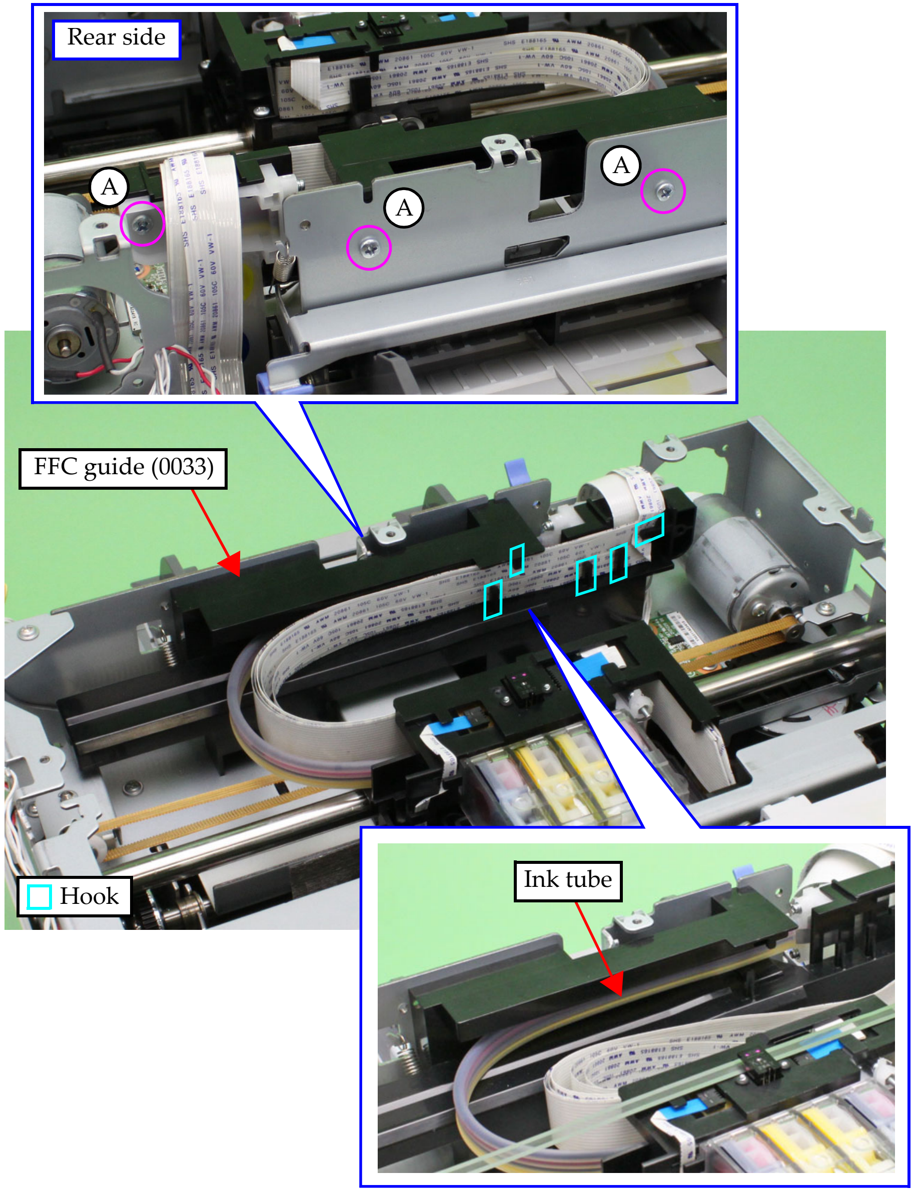


**Figure 5-38. Removing the FFC guide (0033)**

## *Valve Head Assembly / Print Head*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Remove the carriage scale (130). (Page 142)
6. Disconnect the FFC of the carriage assembly (516) and the encoder detector FFC (531) from the encoder board assembly (525).
7. Remove the three screws that secure the carriage cover (0008), and remove the carriage cover (0008).

   A) C.B.P-TITE SCREW,2.5 × 8 three pieces (Ref.# S11)

8. Remove the two screws that secure the encoder board assembly (525), and remove the encoder board assembly (525).

   B) C.B.P-TITE SCREW,2 × 6 two pieces (Ref.# S17)

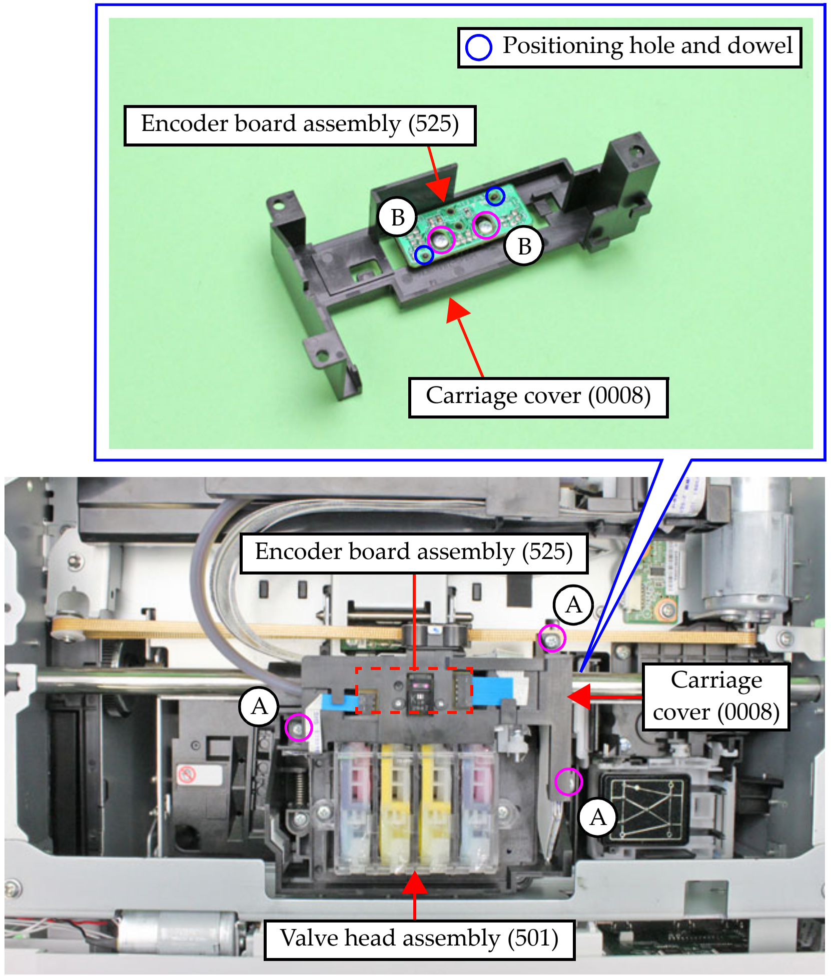

○ Positioning hole and dowel
Encoder board assembly (525)
B
B
Carriage cover (0008)
Encoder board assembly (525)
A
A
A
Carriage cover (0008)
Valve head assembly (501)

**Figure 5-39. Removing the carriage cover (0008)**

9. Remove two screws that secure the valve head assembly (501), and remove the valve head assembly (501).

   C) C.B.P-TITE SCREW,2.5 × 8 two pieces (Ref.# S11)

10. Remove the supply duct unit (524) from the valve head assembly (501), and remove the valve head assembly (501).

> **CAUTION**
>
> When removing the supply duct unit (524), be careful not to get your hands dirty with spilled ink.

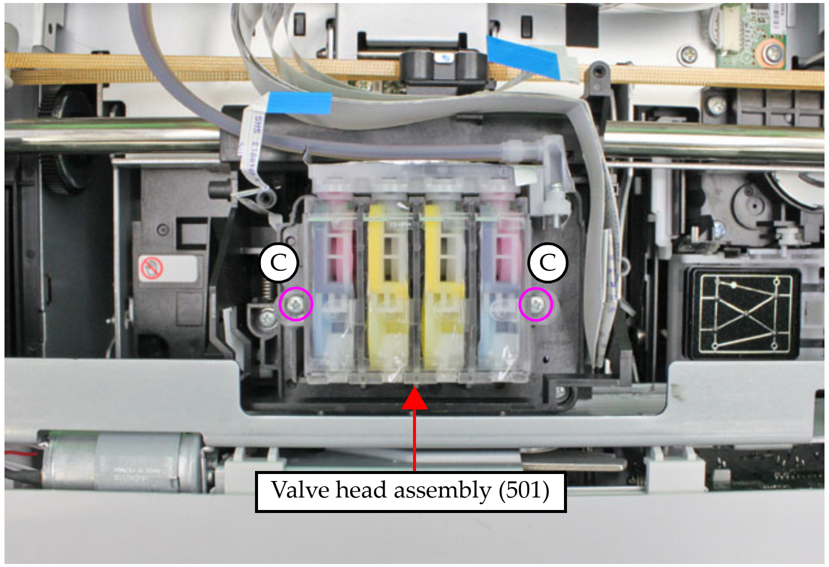

C
C
Valve head assembly (501)

**Figure 5-40. Removing the valve head assembly (501) (1)**

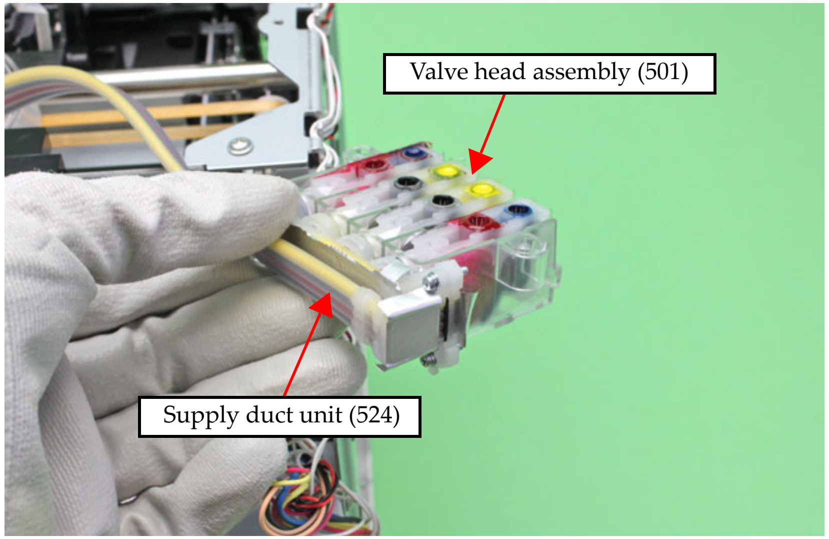

Valve head assembly (501)
Supply duct unit (524)

**Figure 5-41. Removing the valve head assembly (501) (2)**

11. Remove three screws and three plain washers that secure the print head (528), and remove the print head (528) and incline adjust spring (0041).

| | | |
|---|---|---|
| D) C.B.P-TITE SCREW,2.5 × 8 | three pieces | (Ref.# S11) |
| E) P.W.,3 × 0.5 × 6 | three pieces | (Ref.# W01) |

CAUTION

- ☐ Be careful not to contaminate or scratch the nozzle surface of the print head (528).
- ☐ For the products with a black marking on the right side of the carriage set and for which the PG adjustment was performed before shipment, three CR spacers (536) are inserted under the print head (528). In such a case, take care not to lose the CR spacers (536). (See (Figure 5-44 (Page 152)).)

12. Remove the head FFC A (529) and the head FFC B (530) from the print head (528), and remove the print head (528).

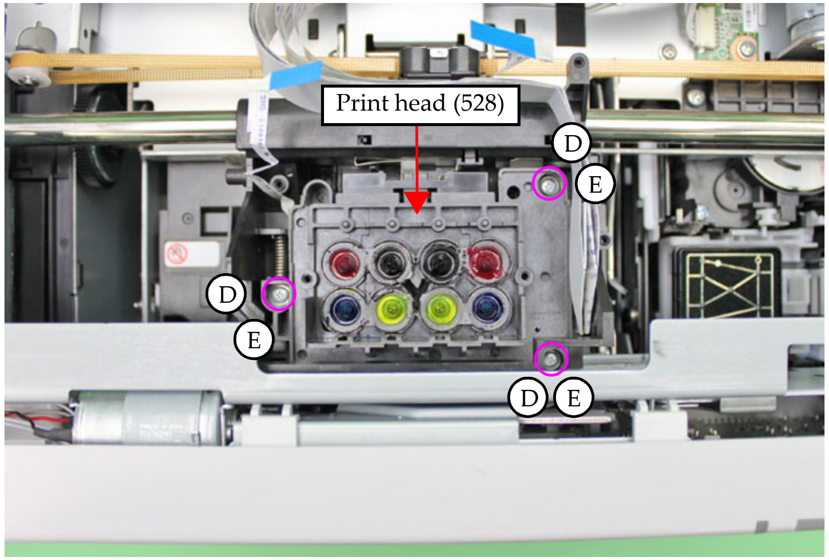


**Figure 5-42. Removing the print head (528) (1)**

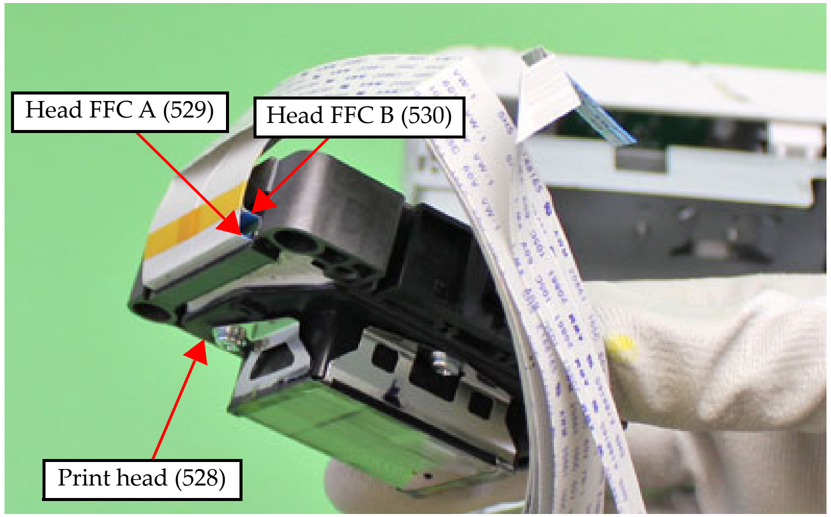


**Figure 5-43. Removing the print head (528) (2)**

**Assembly**

- ☐ For the products with a black marking on the right side of the carriage set and for which the PG adjustment was performed before shipment, three CR spacers (536) are inserted under the print head (528). The reassembly procedure differs depending on the presence of CR spacers (536), so pay attention to the spacers when reassembling the printer.
  - ■ For a printer without CR spacer (536), install the print head without three CR spacer (536).
  - ■ For the printer with them, attach the three CR spacer (536) to the position shown below, then install the print head (528).

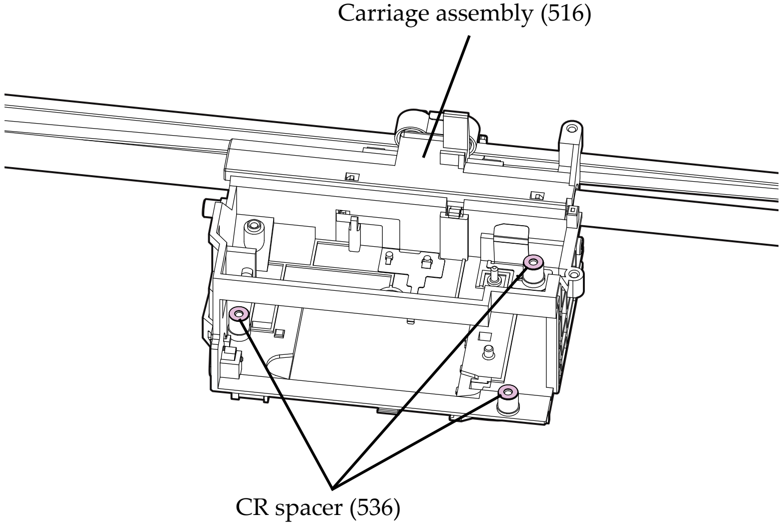


**Figure 5-44. Installing the CR spacer (536)**

**Assembly**

- ☐ When installing the print head (528), follow the steps below.
  1. Assemble the print head (528) with which the Head FFC A (529) and Head FFC B (530) are connected, and tighten the screw (1).
  2. While holding the incline adjust lever in the center, tighten the screw (2).
  3. Insert the screw driver into the red-circled hole and tighten the screw (3).
  4. Attach the incline adjust spring at the point shown in the figure.

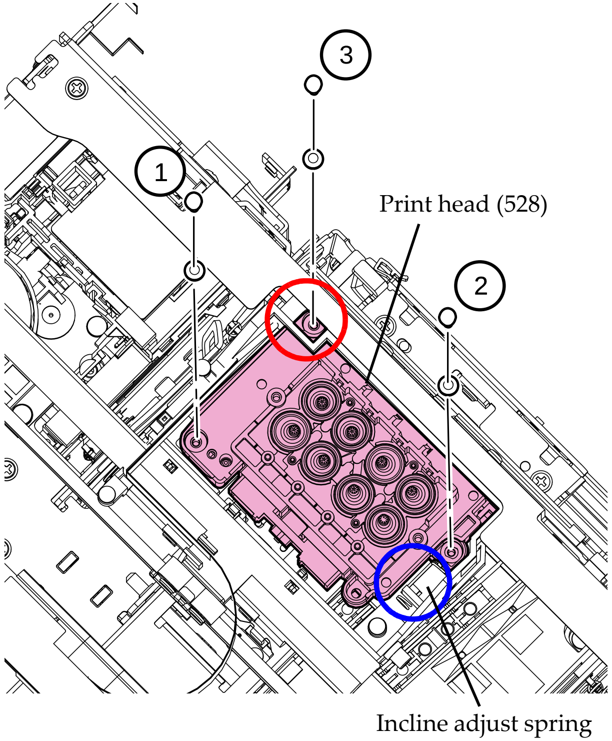


**Figure 5-45. Installing the print head (528)**

Assembly

☐ When installing the encoder board assembly (525), align the two positioning holes of the encoder board assembly (525) with the two dowels on the carriage cover (0008). (Figure 5-39 (Page 149))

☐ When installing the valve head assembly (501), apply cleaning fluid (CR02) to the pins of the supply duct unit (524) and the holes of the valve head assembly (501) before installing them.

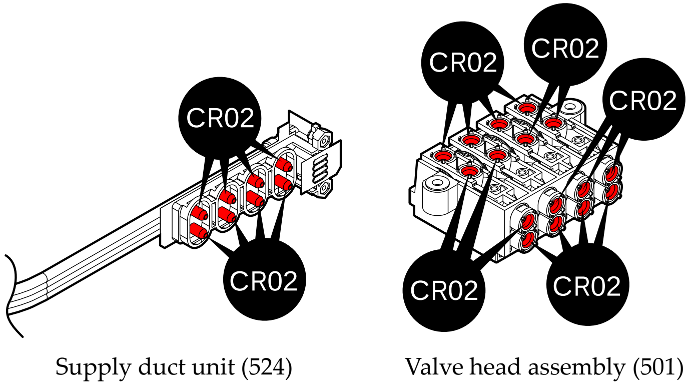

CR02
CR02
CR02
CR02
CR02
CR02
CR02
CR02
Supply duct unit (524)
Valve head assembly (501)

**Figure 5-46. Cleaning fluid (CR02)**

☐ When installing the carriage cover (0008), be careful not to damage head FFC A (529), head FFC B (530), and the encoder detector FFC (531).

☐ When installing the encoder detector FFC (531), make sure the edge of the strengthen plate of the encoder detector FFC (531) is not sticking out from the edge of the hook on the carriage cover (0008) as shown in the figure.

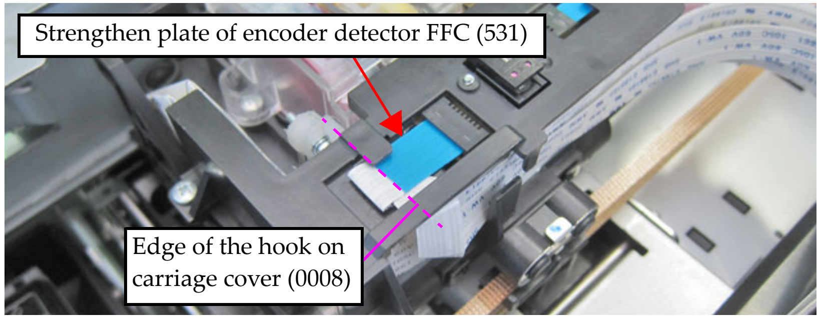

Strengthen plate of encoder detector FFC (531)
Edge of the hook on carriage cover (0008)

**Figure 5-47. Inserting the encoder detector FFC (531)**

Assembly

☐ When routing the PW FFC, secure it at two points with double-sided tape.

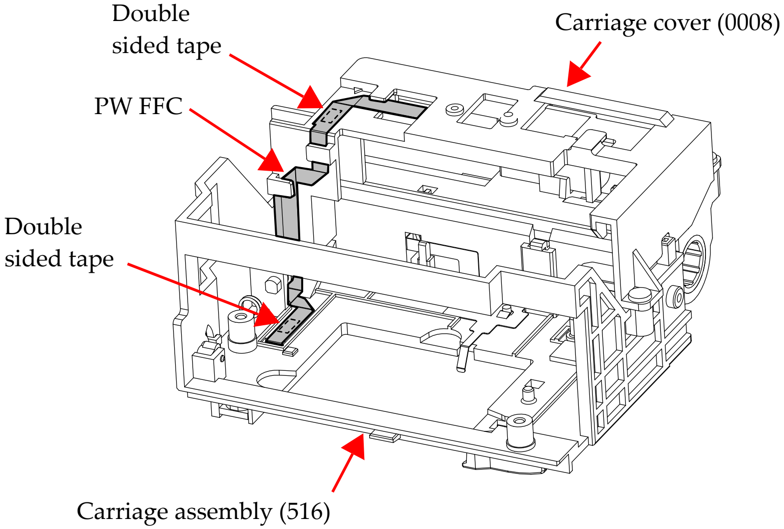

Double sided tape
Carriage cover (0008)
PW FFC
Double sided tape
Carriage assembly (516)

**Figure 5-48. Routing the PW FFC**

☐ When replacing the head FFC A (529), head FFC B (530), and encoder detector FFC (531), stack the three FFCs as follows.

■ Before installing on the printer

1. Apply double-sided tape.

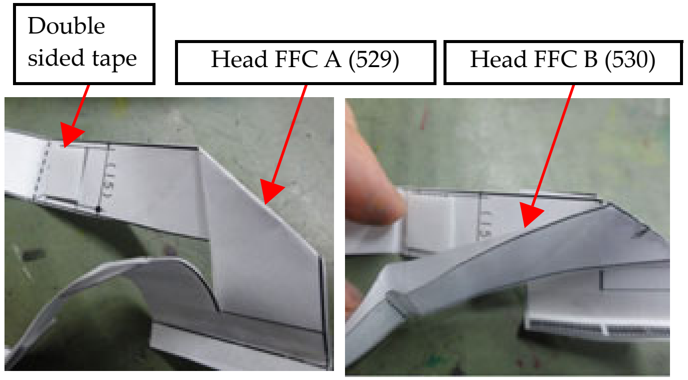
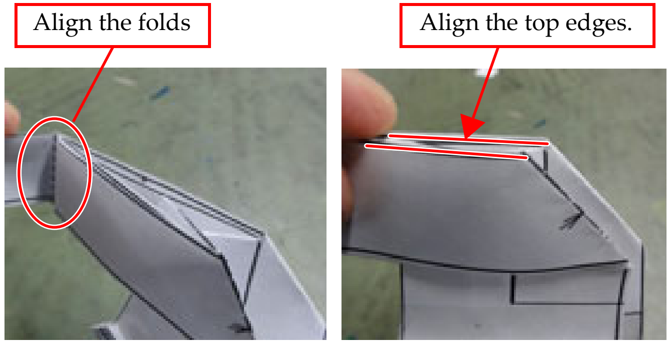

Double sided tape
Head FFC A (529)
Head FFC B (530)

**Figure 5-49. Routing the head FFC (1)**

Assembly

2. Check the routing of the Head FFC A (529) and the Head FFC B (530).

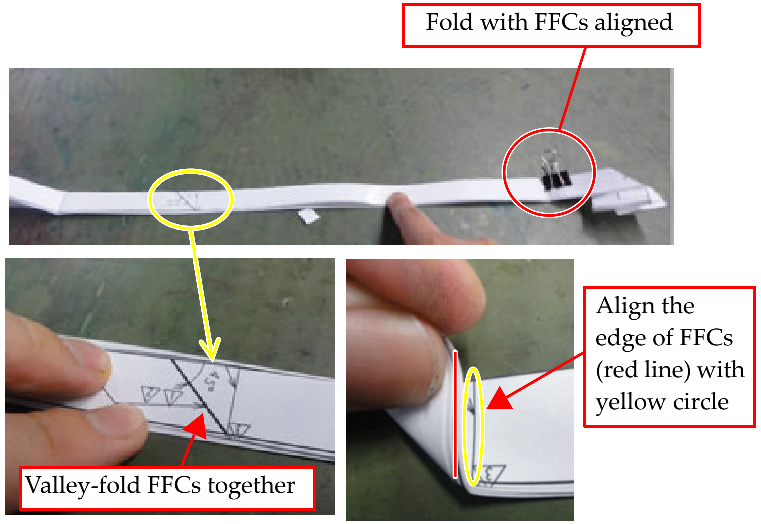


Align the folds

Align the top edges.

**Figure 5-50. Routing the head FFC (2)**

3. Fold the FFCs at the marking near the guide shaft.



Fold with FFCs aligned

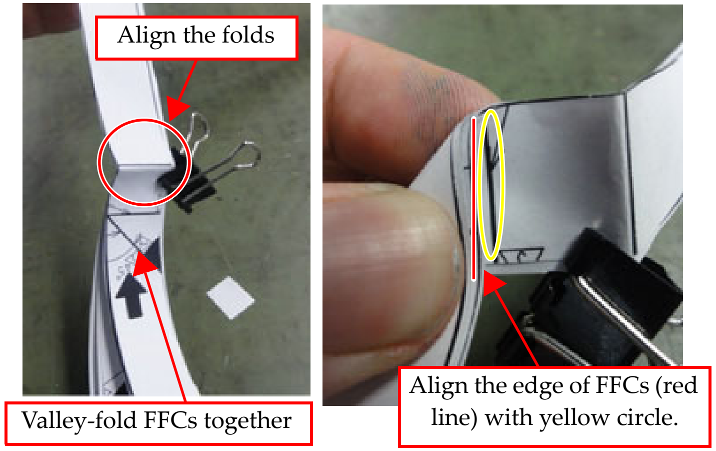
Valley-fold FFCs together

Align the edge of FFCs (red line) with yellow circle

**Figure 5-51. Routing the head FFC (3)**

Assembly

4. Fold the FFCs at the marking near the MCB frame.

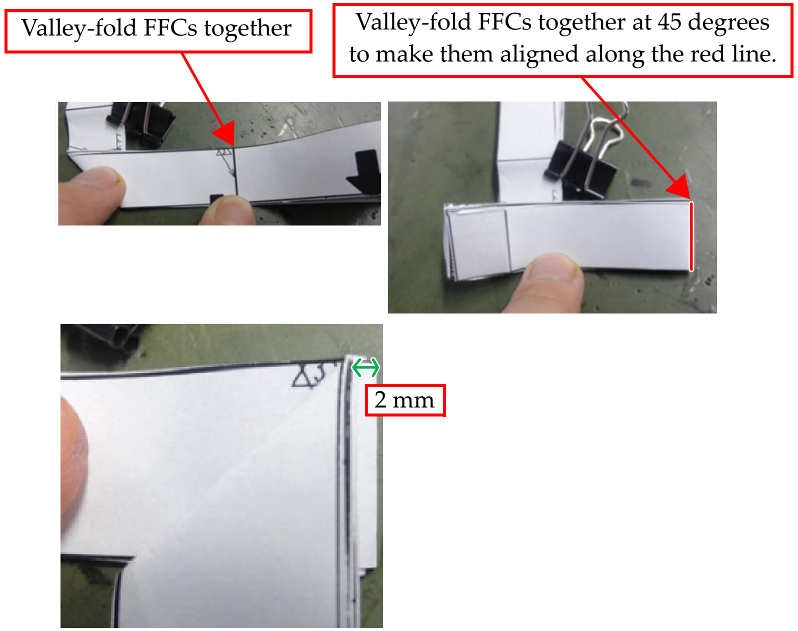


Align the folds

Valley-fold FFCs together

Align the edge of FFCs (red line) with yellow circle.

**Figure 5-52. Routing the head FFC (4)**



Valley-fold FFCs together

Valley-fold FFCs together at 45 degrees to make them aligned along the red line.

2 mm

**Figure 5-53. Routing the head FFC (5)**

Assembly

☐ Installing the FFCs on the printer

1. Attach the FFCs on the FFC guide (0033).

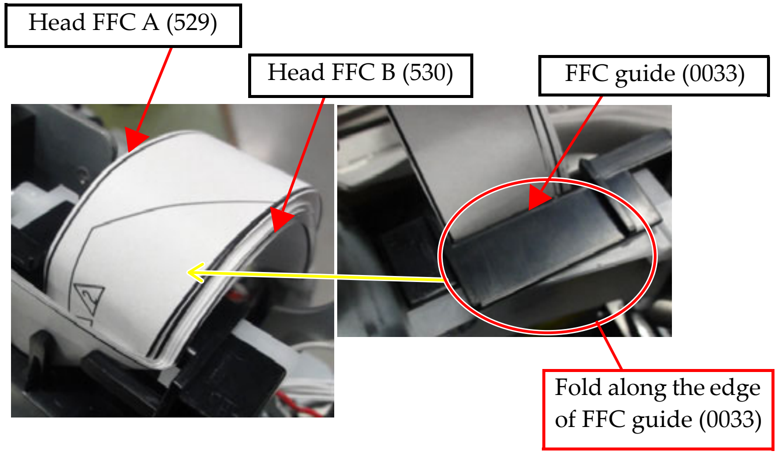

Head FFC A (529)
Head FFC B (530)
FFC guide (0033)
Fold along the edge of FFC guide (0033)

**Figure 5-54. Routing the head FFC (6)**

2. Attach the encoder detector FFC (531).

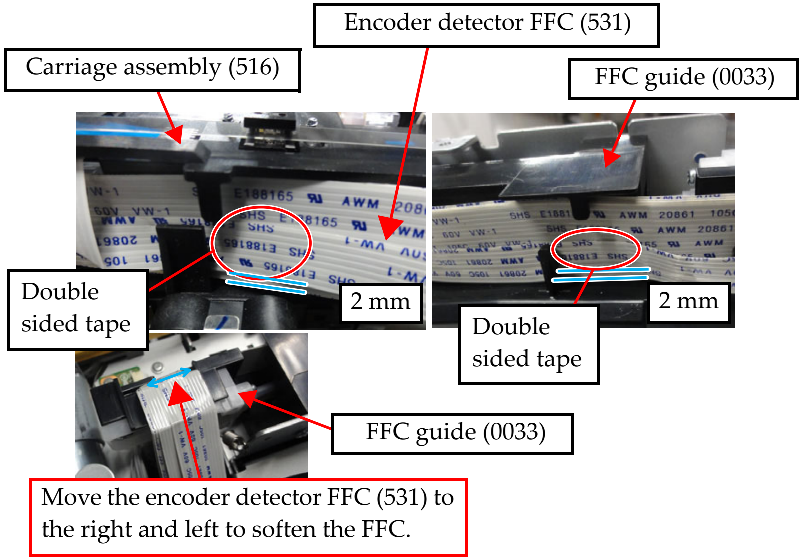

Encoder detector FFC (531)
Carriage assembly (516)
FFC guide (0033)
Double sided tape
2 mm
2 mm
Double sided tape
FFC guide (0033)
Move the encoder detector FFC (531) to the right and left to soften the FFC.

**Figure 5-55. Routing the encoder detector FFC (531)**

Assembly

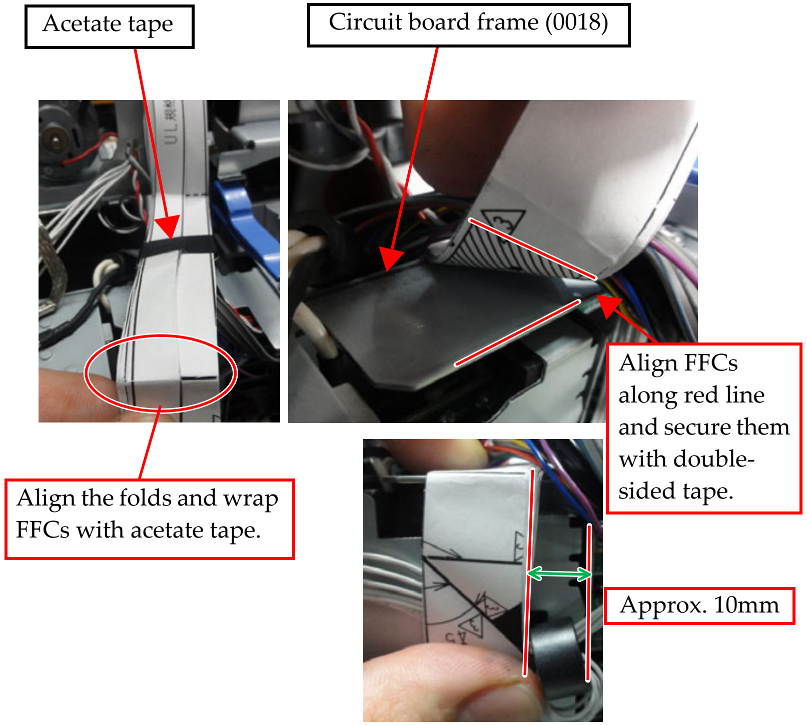

Acetate tape
Circuit board frame (0018)
Align FFCs along red line and secure them with double-sided tape.
Align the folds and wrap FFCs with acetate tape.
Approx. 10mm

**Figure 5-56. Routing the FFCs (1)**

**Assembly**

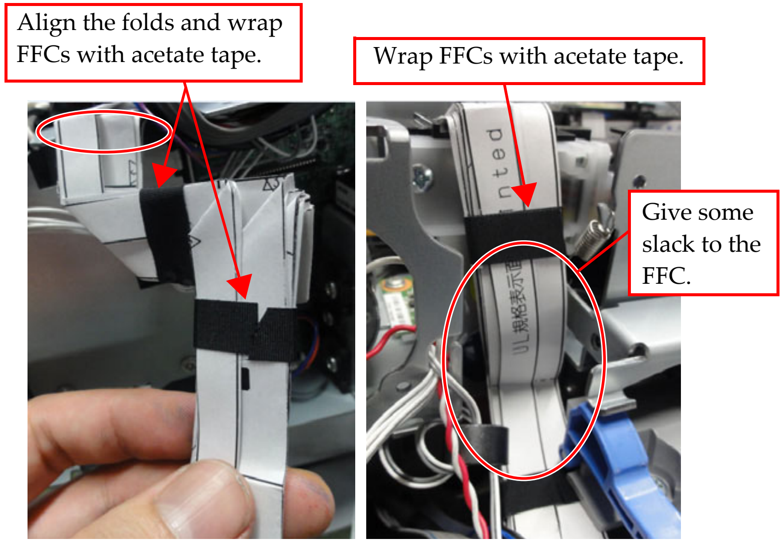

Align the folds and wrap FFCs with acetate tape.
Wrap FFCs with acetate tape.
Give some slack to the FFC.

Figure 5-57. Routing the FFCs (2)

3. Fold the four FFC as shown below and connect them to their connectors on the main circuit board unit (201).

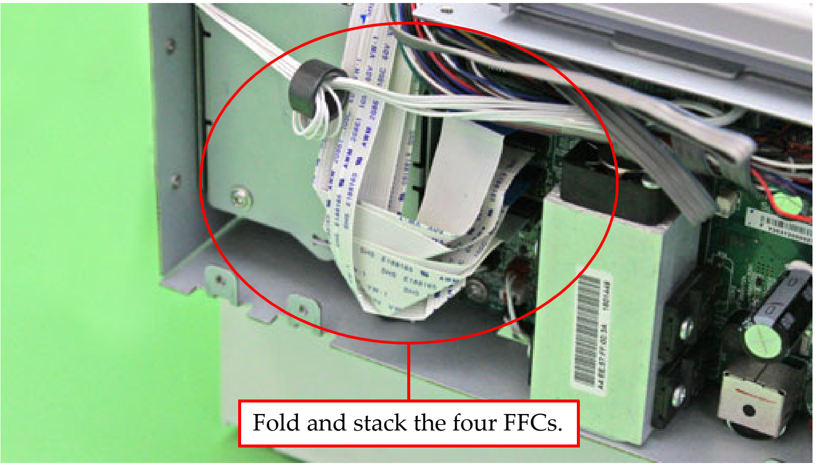

Fold and stack the four FFCs.

Figure 5-58. Routing the FFCs (3)

**Adjustment**

Adjustments must be carried out after any of the following parts have been replaced.

☐ page 206, " Valve head assembly."
☐ page 206, " Print head."
☐ page 206, " Encoder detector FFC."

## Carriage Assembly

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Remove the carriage scale (130). (Page 142)
6. Remove the print head (528). (Page 149)
7. Loosen the earth screw that secures the belt plate, and slide the belt plate outward.

   A) EARTH SCREW,3 × 6 one piece (Ref.# S18)

8. Push the pulley lever in the direction of the arrow, and remove the carriage belt from the pulley.

> **CAUTION**
>
> ☐ Be careful not to let grease stick to the carriage belt, this may cause the carriage belt to deteriorate.
>
> ☐ When removing the carriage belt from the pinion gear of the CR motor assembly (517), be careful not to damage the carriage belt with the rib of the carriage unit (0005).

9. Remove the carriage belt from the pinion gear of the CR motor assembly (517).

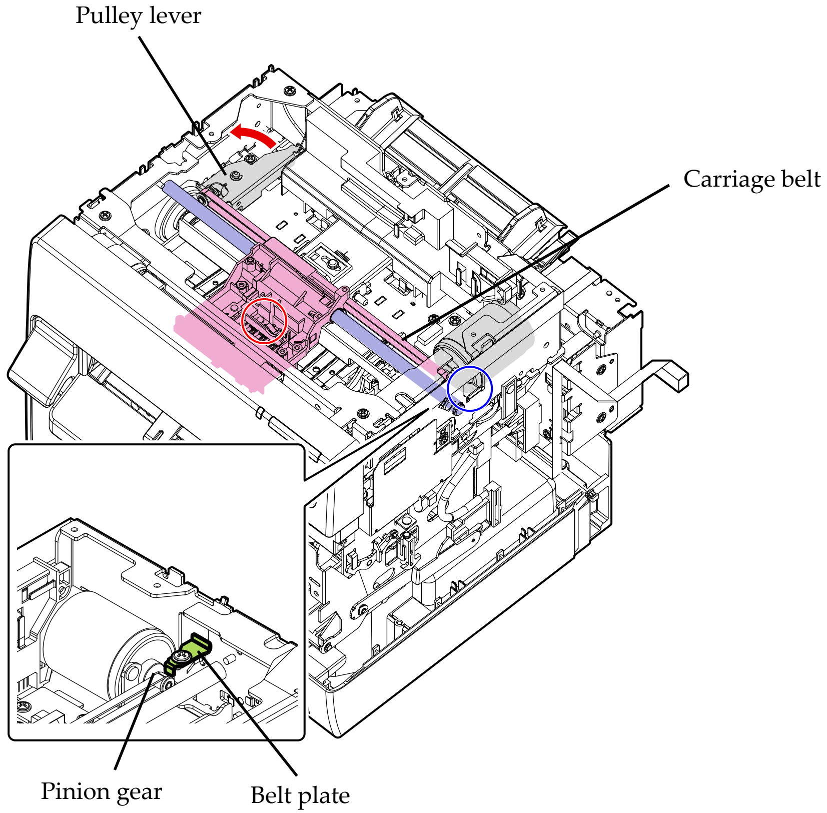


**Figure 5-59. Removing the Carriage Assembly (516) (1)**

10. Remove two screws that secure the two carriage shaft fixed plates (0011), and remove the two carriage shaft fixed plates (0011).

    B) C.B.S-TITE SCREW,3 × 6 two pieces (Ref.# S10)

11. Remove the carriage assembly (516) and the carriage shaft (514) while drawing the carriage shaft (514) out of the hole in the frame.

CAUTION

Be careful not to damage the carriage shaft (514) with the frame.

12. Pull the carriage shaft (514) out of the carriage assembly (516).

Assembly

☐ When installing the carriage assembly (516), follow the steps below.

1. Align the groove at the front of the printer in the carriage assembly (516) with the rib on the carriage front frame (0012).
2. Install the carriage shaft (514) with the frame.
3. Align the carriage shaft fixed plate (0011) with the groove in the carriage shaft (514) and the dowel on the frame, and secure them with the screw to install the carriage assembly (516).

☐ When attaching the belt plate, confirm there is a gap between 0.1 mm and 0.3 mm from the carriage belt.

Lubrication

Be sure to perform the required lubrication to the specified points.

☐ page 257, " Carriage assembly."

Adjustment

☐ When the carriage assembly (516) has been replaced, perform (execute) the “Aging of the Carriage set” from the adjustment program in order to stabilize the sliding load of the carriage assembly (516) and the carriage shaft(514).

☐ Adjustments must be carried out after any of the following parts have been replaced.

- ■ page 206, " Carriage assembly."
- ■ page 206, " Carriage shaft."

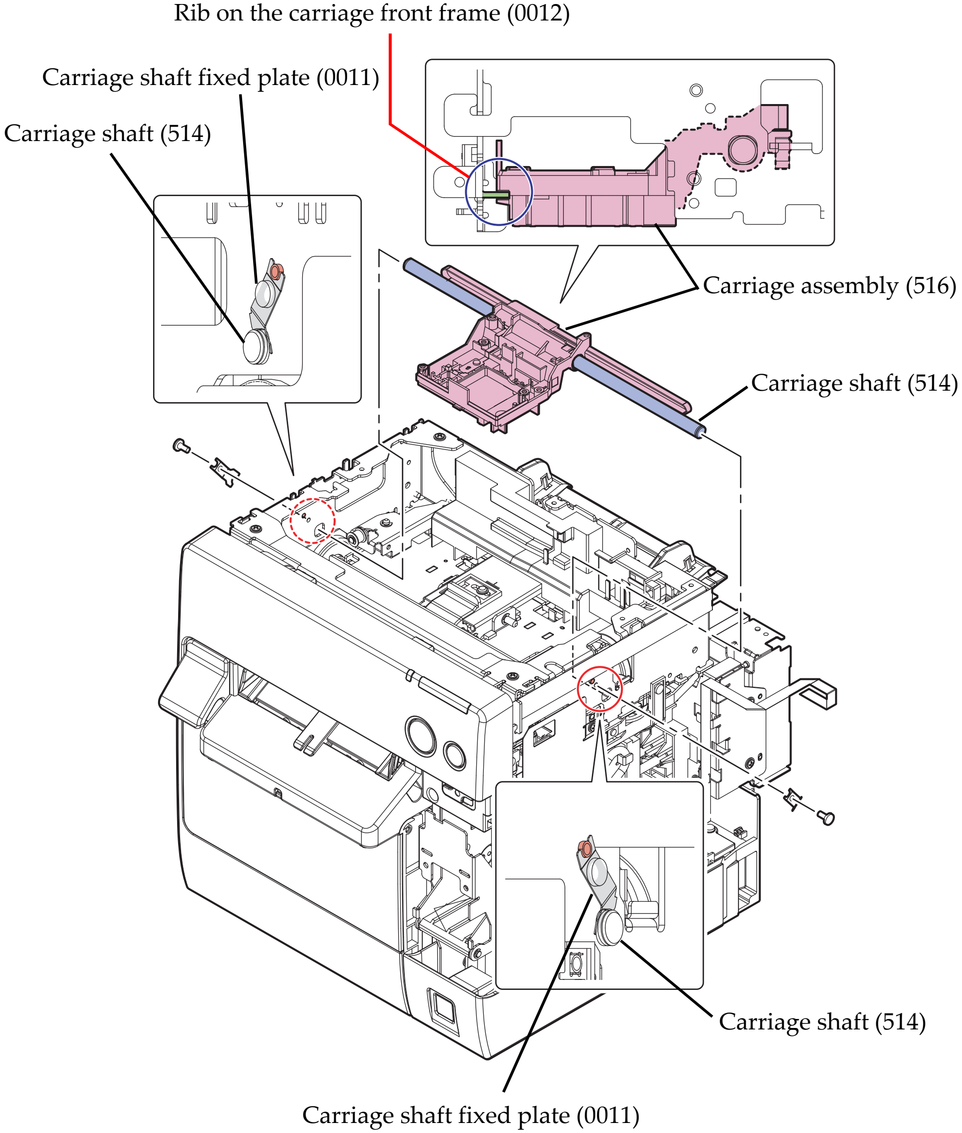

Rib on the carriage front frame (0012)
Carriage shaft fixed plate (0011)
Carriage shaft (514)
Carriage assembly (516)
Carriage shaft (514)
Carriage shaft (514)
Carriage shaft fixed plate (0011)

Figure 5-60. Removing the Carriage Assembly (516) (2)

## *Acceleration Sensor Board Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Remove the circuit board cover (0006). (Page 132)
6. Disconnect the acceleration board lead wire (539) from the connector (CN30) on the main circuit board unit (201).
7. Release the acceleration board lead wire (539) from the cutout of the frame.
8. Remove the two earth screws that secure the acceleration sensor board assembly (538), and remove the acceleration sensor board assembly (538).

   A) EARTH SCREW,3 × 6 two pieces (Ref.# S18)
9. Disconnect the acceleration board lead wire (539) from the acceleration sensor board assembly (538).

**Assembly**

☐ When installing the acceleration sensor board assembly (538), align the acceleration sensor board assembly (538) with the protrusions on the frame, and tighten the screws in the order shown in Figure 5-61.

☐ For routing the acceleration board lead wire (539), see page 200, " Rear Side."

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Acceleration sensor board assembly."

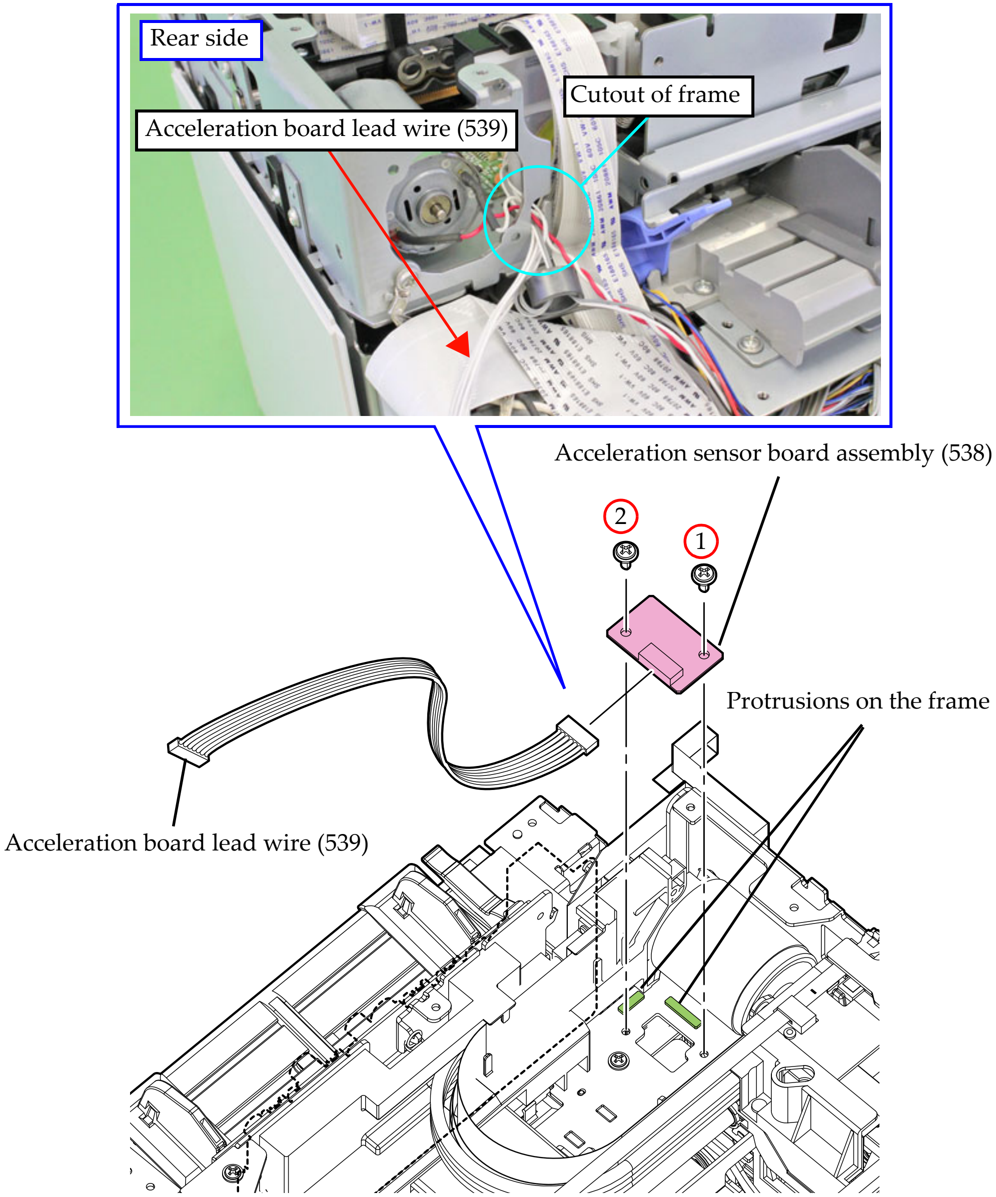

Rear side
Cutout of frame
Acceleration board lead wire (539)
Acceleration sensor board assembly (538)
2
1
Protrusions on the frame
Acceleration board lead wire (539)

**Figure 5-61. Removing the acceleration sensor board assembly (538)**

## *TR Circuit Board Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the carriage scale (130). (Page 142)
7. Remove the FFC guide (0033). (Page 148)
8. Remove the two screws that secure the two carriage shaft fixed plate (0011), and remove the two carriage shaft fixed plates (0011). (Figure 5-60 (Page 158))
9. Disengage the carriage shaft (514) from the hole in the frame. (Figure 5-60 (Page 158))
10. Disconnect the lead wire of the TR circuit board assembly (515) from the connector (CN23) on the main circuit board unit (201).
11. Release the lead wire of the TR circuit board assembly (515) from the cutout of the frame.
12. Peel off the acetate tape (W10 mm × L20 mm) that secures the lead wire of the TR circuit board assembly (515) on the side of the acceleration sensor board assembly (538).
13. Remove the PF hold spring (0034) with the long-nose pliers.

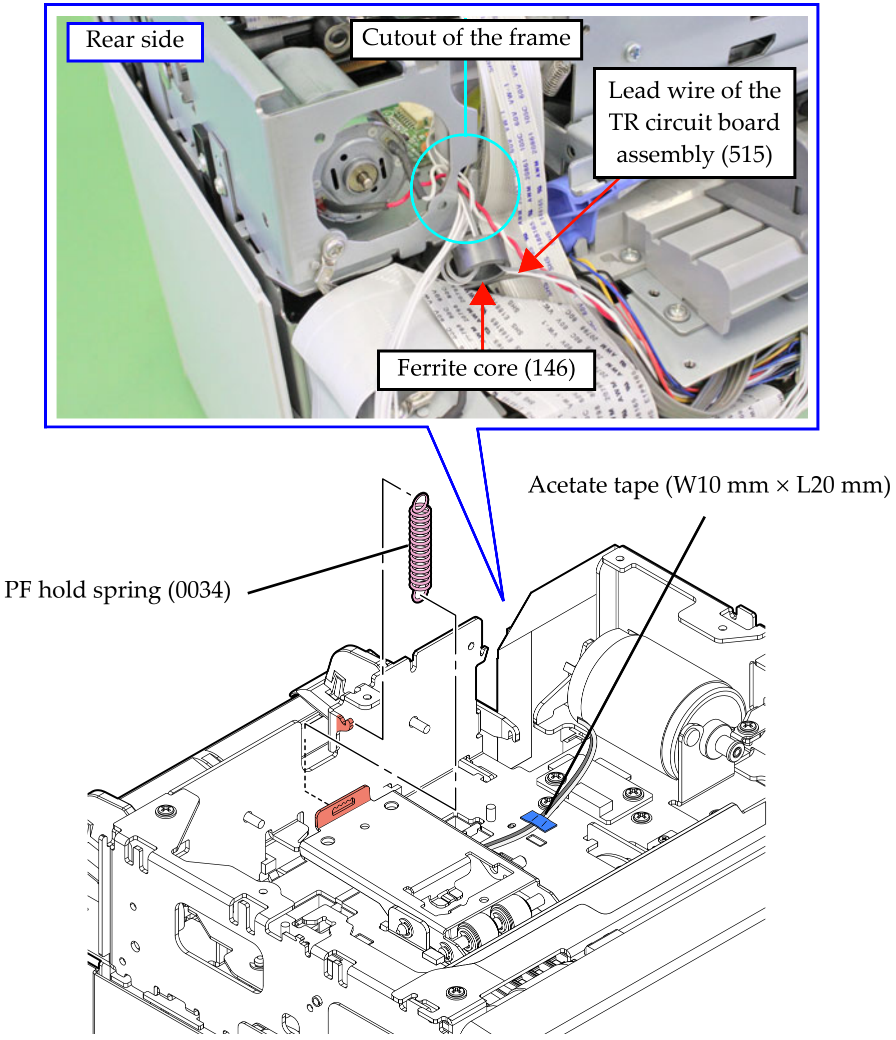

Rear side
Cutout of the frame
Lead wire of the TR circuit board assembly (515)
Ferrite core (146)
Acetate tape (W10 mm × L20 mm)
PF hold spring (0034)

**Figure 5-62. Removing the TR circuit board assembly (515) (1)**

14. Remove two E-rings (E04), and pull out the PF hold frame (0035) to the CR motor assembly (517) side, and remove the main hold roller assembly (0036).

    A) E-RING,3: two pieces (Ref.# E04)

15. Release the lead wire of the TR circuit board assembly (515) from the two hooks on the label detector holder.

16. Remove the screw that secures the TR circuit board assembly (515), and remove the TR circuit board assembly (515).

    B) C.B.P-TITE SCREW,2.5 × 8 one piece (Ref.# S11)

**Assembly**

☐ When installing the PF hold frame (0035), make sure to attach it with its sharpened end to the left side, as seen from the front of the printer.

☐ For routing the lead wire of the TR circuit board assembly (515), see page 200, " Rear Side.".

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " TR circuit board assembly."

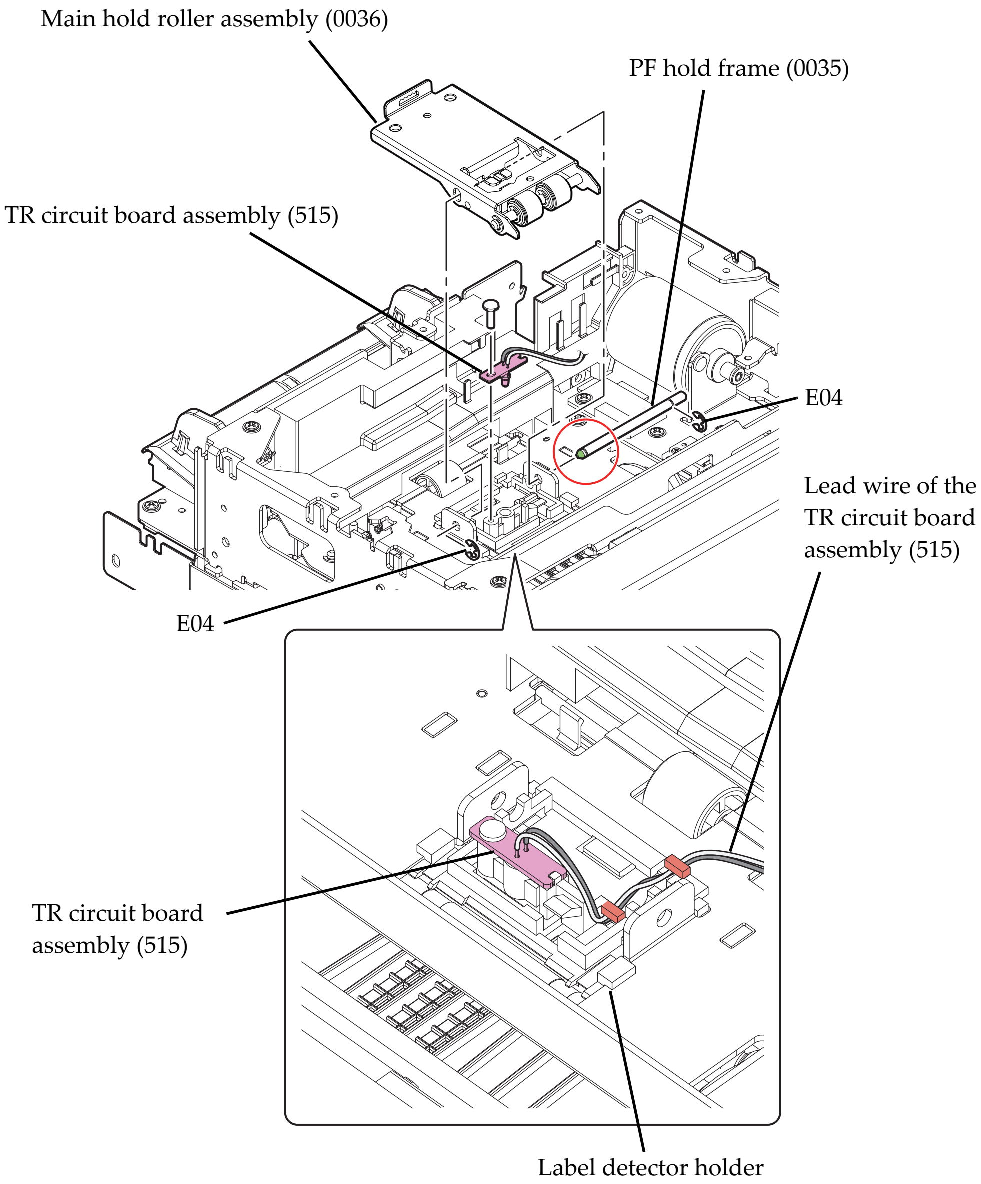

Main hold roller assembly (0036)
PF hold frame (0035)
TR circuit board assembly (515)
E04
Lead wire of the TR circuit board assembly (515)
E04
TR circuit board assembly (515)
Label detector holder

**Figure 5-63. Removing the TR circuit board assembly (515) (2)**

## A/C Case Assembly

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Open the IC cover assembly (113).
5. Open the M/B cover (142).
6. Remove three screws that secure the A/C case assembly (112).

   A) C.B.S-TITE SCREW,3 × 6 three pieces (Ref.# S01)
7. Rotate the A/C case assembly (112) in the direction of the arrow to remove it.

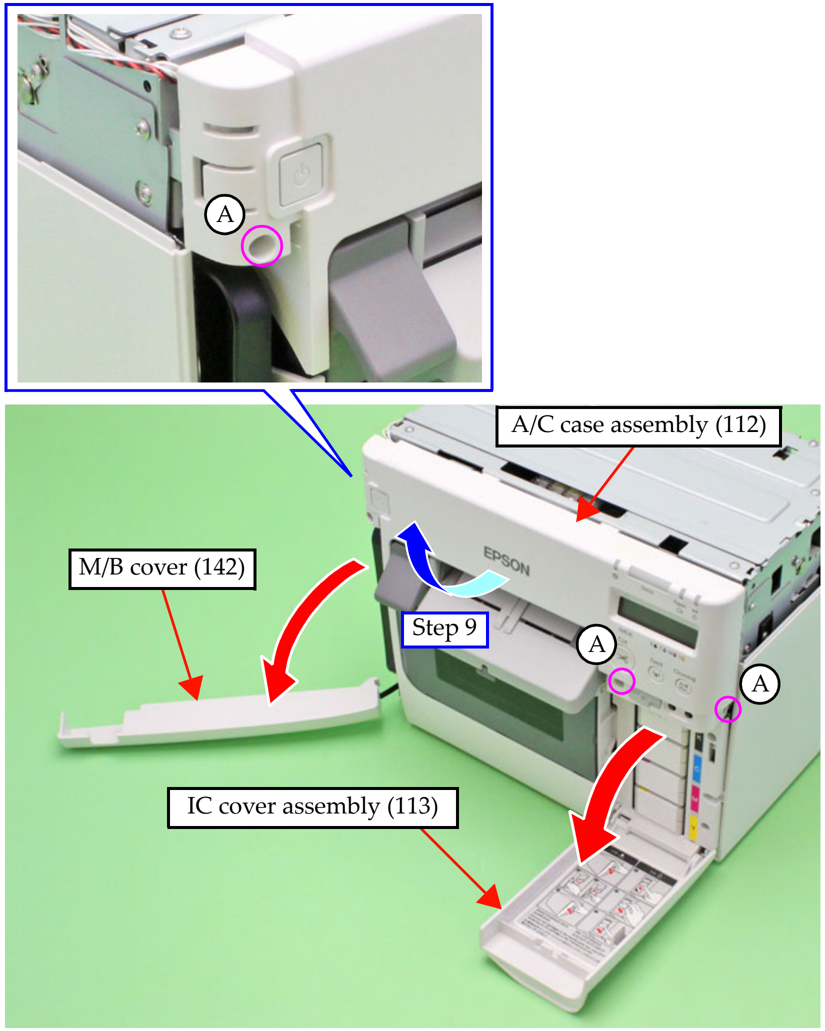

A
A/C case assembly (112)
M/B cover (142)
Step 9
A
A
IC cover assembly (113)

Figure 5-64. Removing the A/C case assembly (112)

Check

The lead wires of the M/B cover (142) and power switch are included in the A/C case assembly (112) as an ASP. Therefore, when replacing the A/C case assembly (112), select from the procedures below according to the damage of the lead wires of the M/B cover (142) and power switch.

☐ If the lead wires of the M/B cover (142) and power switch are not broken
Remove the lead wires of the M/B cover (142) and power switch from the new A/C case assembly (112), and connect the currently installed lead wires of the M/B cover (142) and power switch to the A/C case assembly (112).

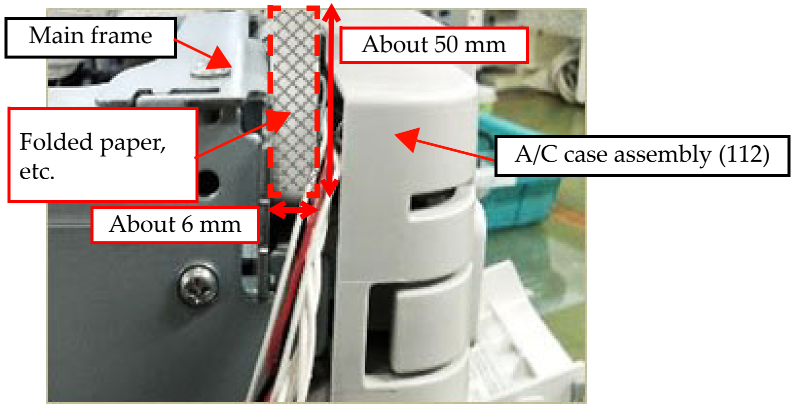
☐ If the lead wires of the M/B cover (142) or power switch is broken
Remove the lead wire of M/B cover (142) or power switch as follows.

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Remove the circuit board cover (0006). (Page 132)
6. Disconnect the connector (CN4 or CN31) for the lead wire of the M/B cover (142) or power switch. (page 202, " Main Circuit Board Unit.")
7. Release the lead wire of the M/B cover (142) or power switch from the hook and five ribs on the frame of the main body, then remove the broken lead wire. (Page 165 Step8.)

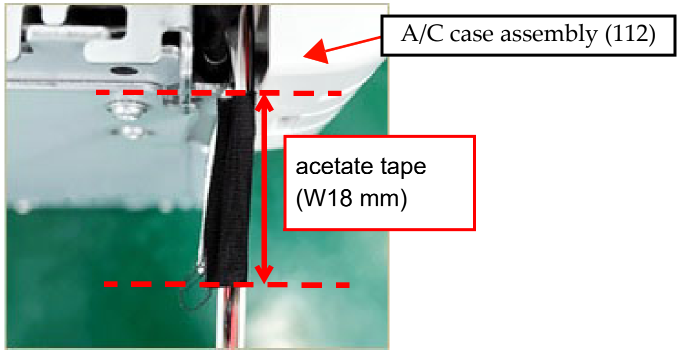
Assembly

☐ When installing the A/C case assembly (112), follow the steps below.

1. Installing the A/C case assembly (112).
2. Disconnect the connectors (CN20/CN4/CN31) for the lead wires of the auto cutter unit (523)/ M/B cover (142)/ power switch (page 202, " Main Circuit Board Unit."), then release the lead wires from the hook and five ribs on the frame of the main body.(page 165, " Auto Cutter Unit.")
3. Insert the folded paper, etc. (about 6 mm × about 50 mm × about 10 mm) between the main frame and A/C case assembly (112) as shown below.

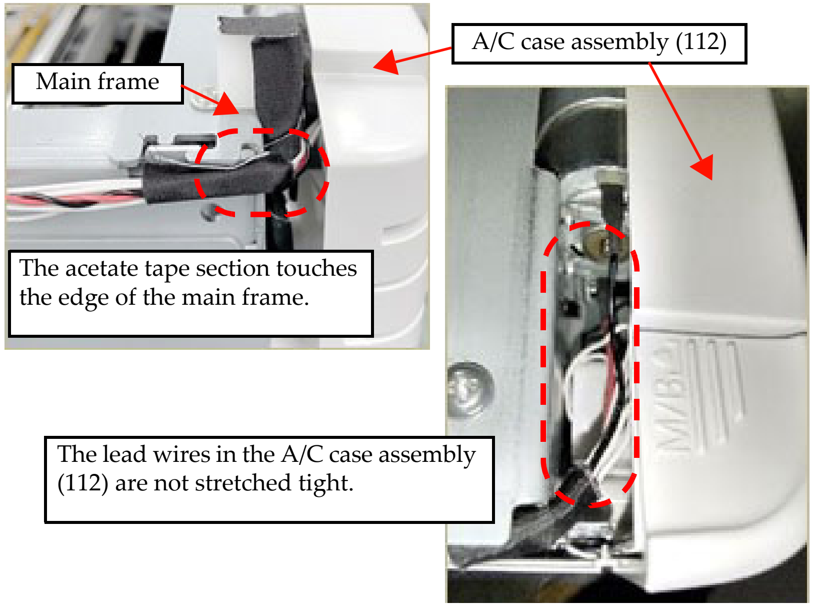


4. Bind the lead wires with the acetate tape (W18 mm × L20 mm) as shown below.
(18mm width from the edge of A/C case assembly (112))



**Assembly**

5. Route the lead wires through the five ribs, then route the lead wires through the hook on the rear of the frame of the main body.(page 165, " Auto Cutter Unit.")
6. Remove the folded paper, etc., then make sure the following 2 points.
   - The acetate tape section touches the edge of the main frame.
   - The lead wires in the A/C case assembly (112) are not stretched tight.


A/C case assembly (112)
Main frame
The acetate tape section touches the edge of the main frame.
The lead wires in the A/C case assembly (112) are not stretched tight.

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " A/C case assembly."

## *Auto Cutter Unit*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the A/C case assembly (112). (Page 162)
7. Disconnect the lead wire of the auto cutter unit (523) from the connector (CN20) on the main circuit board unit (201).
8. Release the lead wire of the auto cutter unit (523) from the hook and five ribs of the main frame.
9. Remove the two earth screws that secure the auto cutter unit (523), and remove the autocutter unit (523).

   A) EARTH SCREW,3 × 6 two pieces (Ref.# S18)

**Assembly**

When installing the auto cutter unit (523), follow the steps below.

1. Align the two positioning holes in the auto cutter unit (523) with the dowel and rib of the carriage front frame (0012), and secure them with the screws.
2. Route the lead wire of the auto cutter unit (523) through the five ribs.
3. Route the lead wire of the auto cutter unit (523) through the hook on the rear of the frame of the main body.

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 208, " Auto cutter unit."

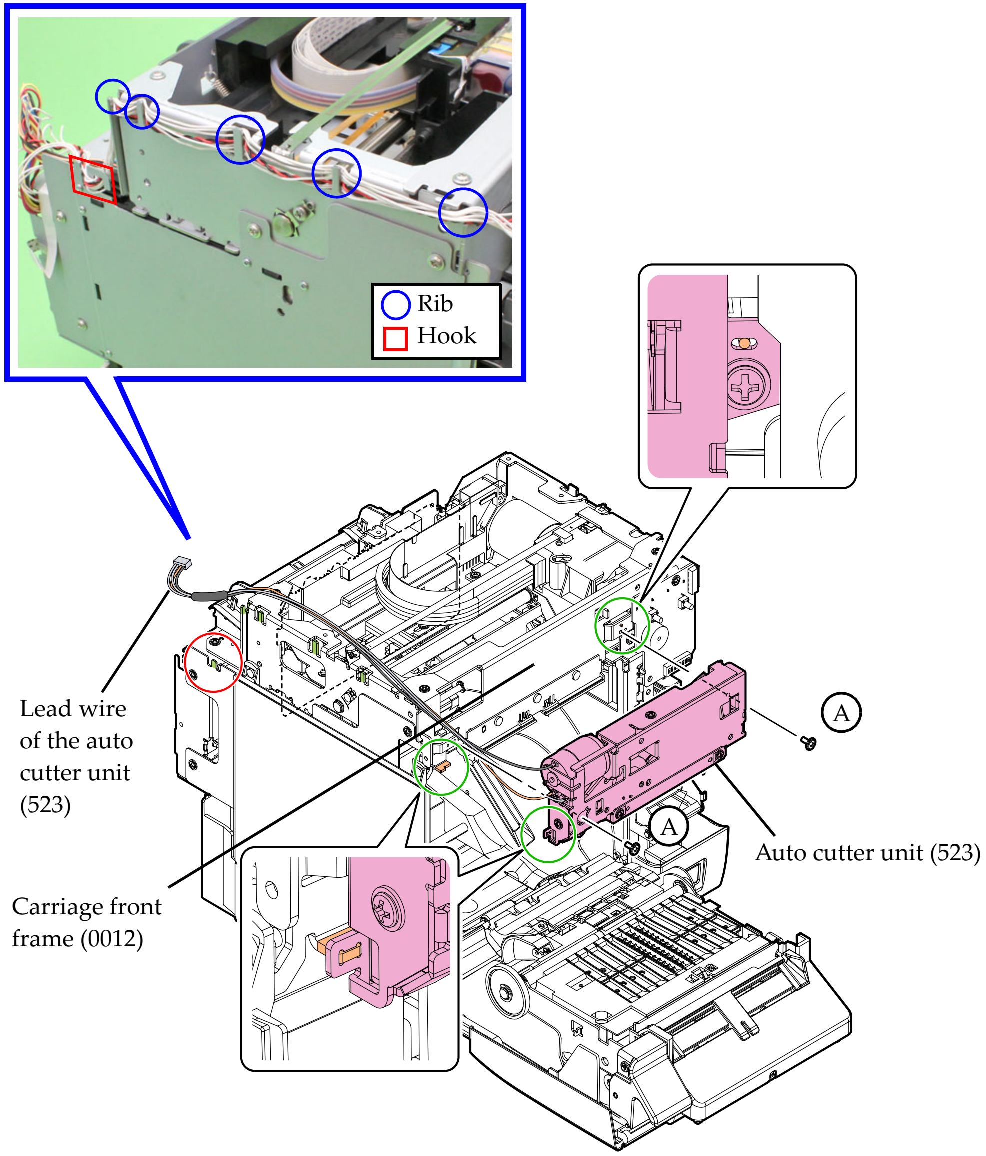

○ Rib
☐ Hook
Lead wire of the auto cutter unit (523)
Carriage front frame (0012)
A
A
Auto cutter unit (523)

**Figure 5-65. Removing the autocutter unit (523)**

## Panel Circuit Board Assembly

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the A/C case assembly (112). (Page 162)
5. Disconnect the four FFCs of the cartridge holder unit (546) and the two panel board FFC (121) from the connectors on the panel circuit board assembly (120).
6. Remove two screws that secure the panel circuit board assembly (120), and remove the panel circuit board assembly (120).

   A) EARTH SCREW,3 × 6 two pieces (Ref.# S03)

7. Remove the LCD cover (143) from the panel circuit board assembly (120).

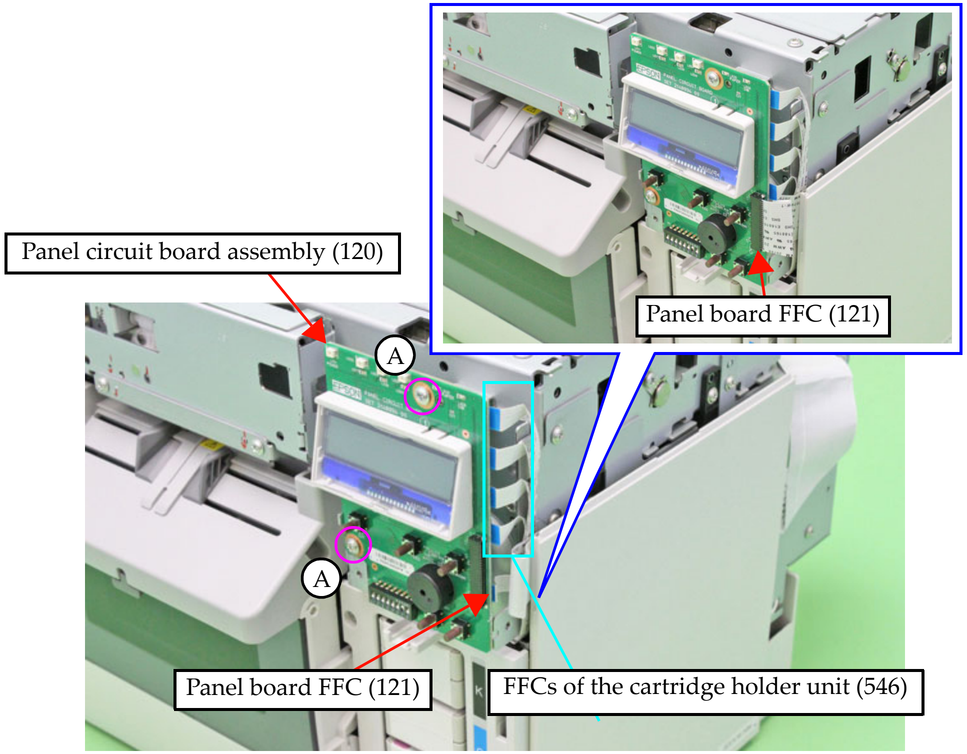

Panel circuit board assembly (120)
Panel board FFC (121)
A
A
Panel board FFC (121)
FFCs of the cartridge holder unit (546)

**Figure 5-66. Removing the panel circuit board assembly (120) (1)**

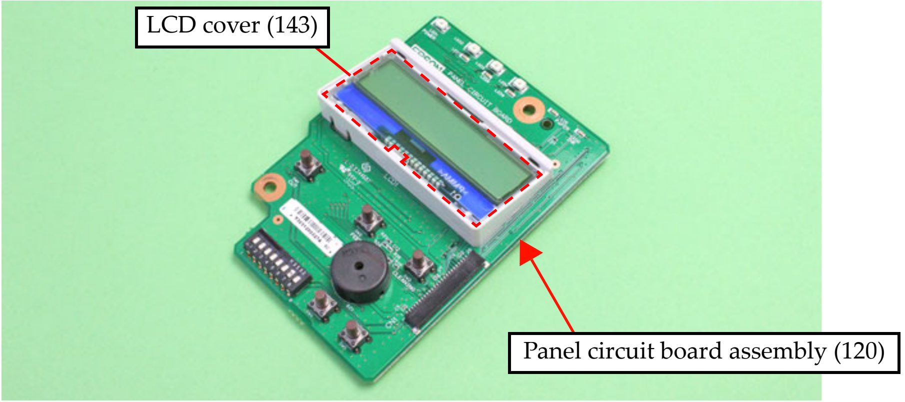

LCD cover (143)
Panel circuit board assembly (120)

**Figure 5-67. Removing the panel circuit board assembly (120) (2)**

Assembly

☐ When attaching the LCD cover (143) on the panel circuit board assembly (120), be careful of the following.

- Set the LCD cover (143) with the inscription facing down.
- Align the two protrusions on the LCD cover (143) with the positioning holes on the panel circuit board assembly (120), then secure the panel circuit board assembly (120) with the clip.

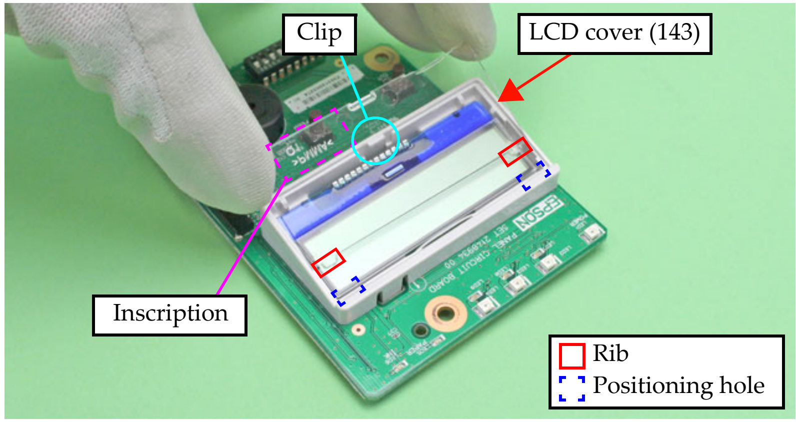

Clip
LCD cover (143)
Inscription
🟥 Rib
⬚ Positioning hole

**Figure 5-68. Installing the LCD cover (143)**

- Fold the four FFCs of the cartridge holder unit (546) into a Z-shape, then insert them inside the panel circuit board plate (570), and connect them to the panel circuit board assembly (120).

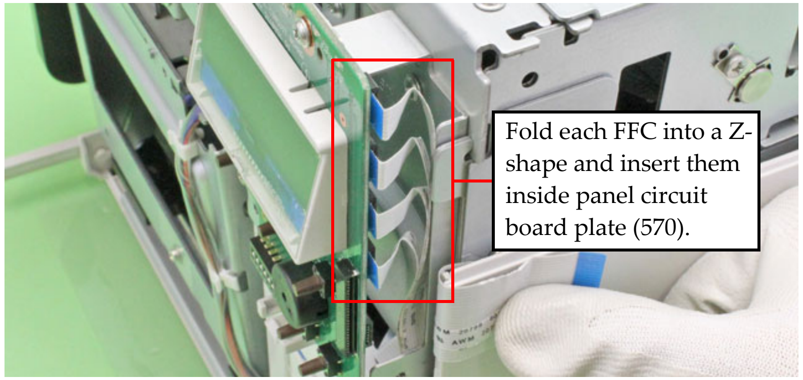

Fold each FFC into a Z-shape and insert them inside panel circuit board plate (570).

**Figure 5-69. Connecting FFCs**

Adjustment

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Panel board FFC."

## *CR Motor Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the upper case assembly (103). (Page 131)
4. Remove the top frame (0007). (Page 141)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the A/C case assembly (112). (Page 162)
7. Remove the panel circuit board assembly (120). (Page 166)
8. Remove the two screws that secure the panel circuit board plate (570), and remove the panel circuit board plate (570).

   A) SCREW,EARTH,3×6 two pieces (Ref.# S18)

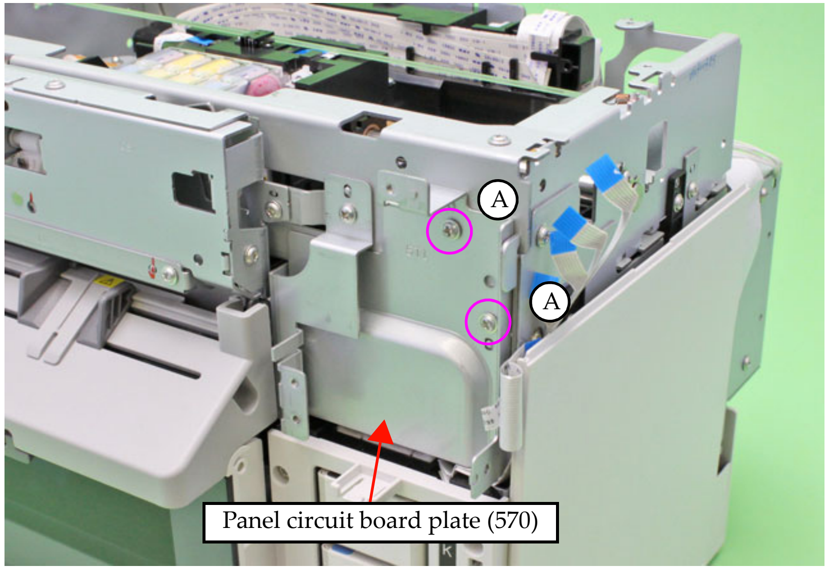


**Figure 5-70. Removing the CR motor assembly (517) (1)**

9. Disconnect the lead wire of the CR motor assembly (517) from the connector (CN15) on the main circuit board unit (201).
10. Remove the two screws that secure the CR motor assembly (517) and remove the CR motor assembly (517) while avoiding the CR motor assembly (517) from hitting the FFC guide (0033) in the direction of the arrow.

B) C.B. SCREW,3 × 5 two pieces (Ref.# S16)

**Check**

When removing the two screws that secure the CR motor assembly (517), remove the screws by inserting the long shaft screw driver into the holes on the front of the FFC guide (0033) shown in the figure.

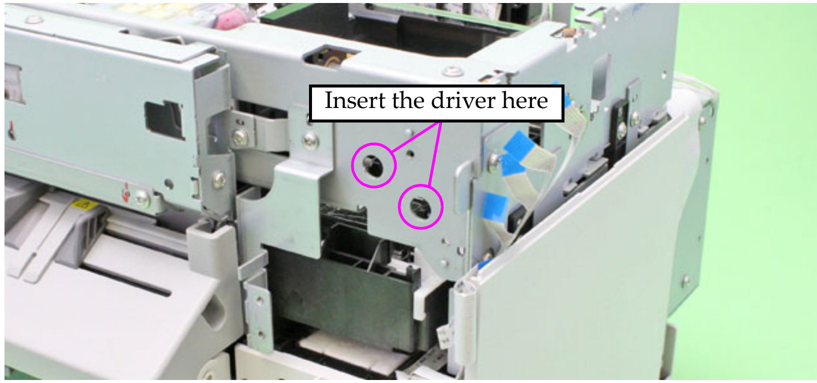

Insert the driver here

**Figure 5-71. Holes to insert the screw driver**

**Assembly**

When installing the CR motor assembly (517), install the CR motor assembly (517) with the white lead wire up.

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " CR motor assembly."

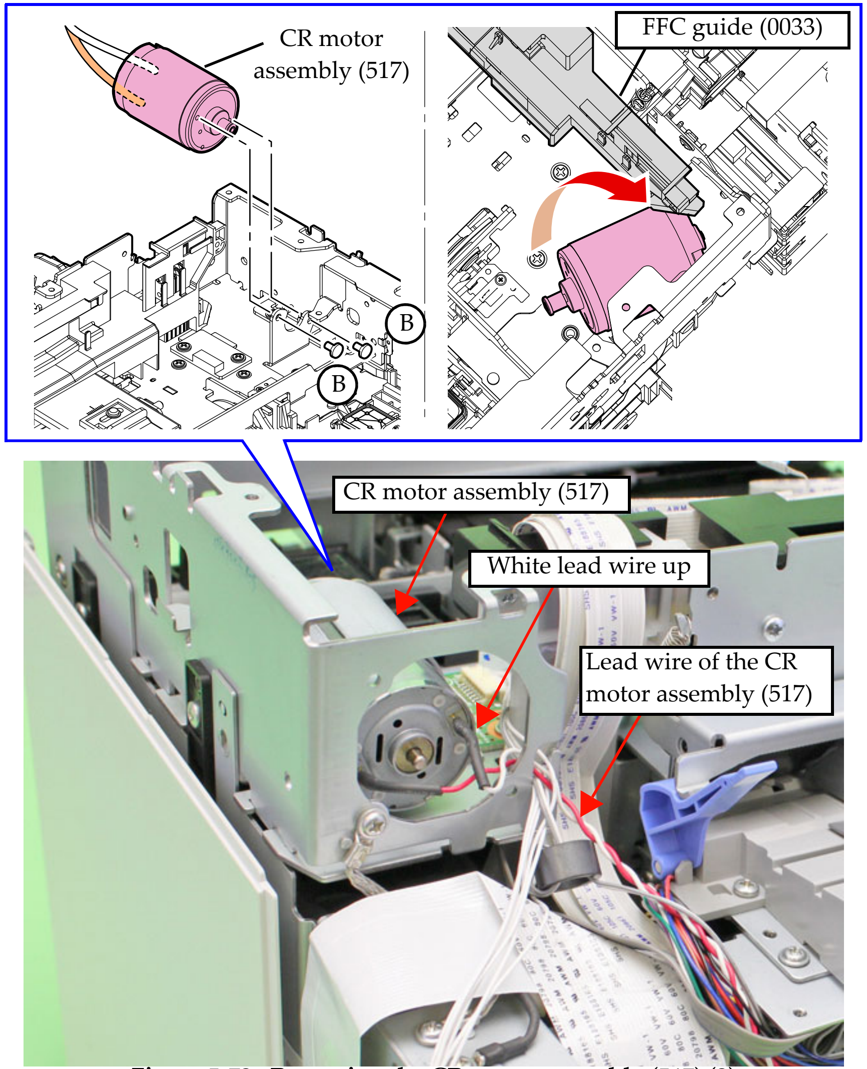

CR motor assembly (517)
FFC guide (0033)
B
B
CR motor assembly (517)
White lead wire up
Lead wire of the CR motor assembly (517)

**Figure 5-72. Removing the CR motor assembly (517) (2)**

## *Lower Case Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the left case (105) / M/B cover (142). (Page 123)
5. Remove the front paper guide assembly (111). (Page 124)
6. Remove the roll paper cover sub assembly (129). (Page 125)
7. Remove the two roll paper cover guide (147).
8. Place the printer with the bottom up.

> CAUTION
>
> If the carriage assembly (516) is not capped, ink may leak during working. Move the carriage assembly (516) back to the home position to cap the carriage, then turn the printer upside down.
> (page 120, " Releasing the Carriage Lock.")

9. Remove the five screws that secure the lower case assembly (109), and remove the lower case assembly (109).

   A) C.B.S-TITE SCREW,3 × 6 five pieces (Ref.# S01)

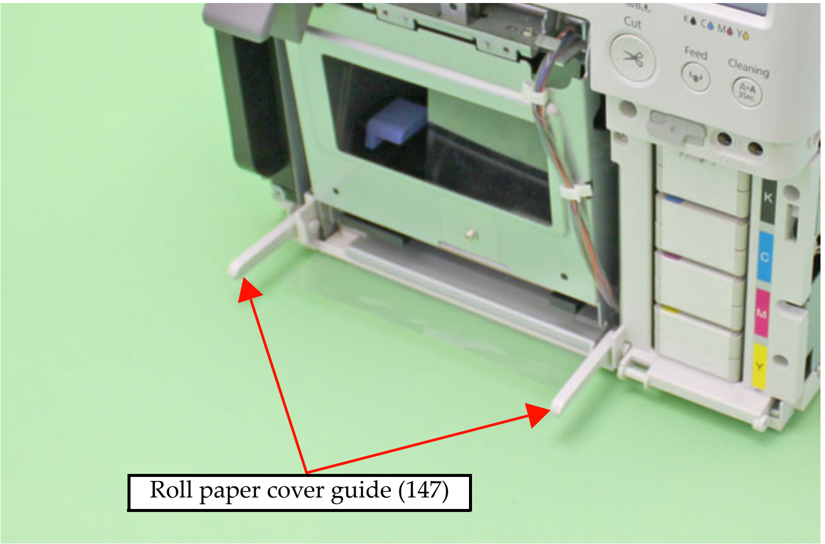


Figure 5-73. Removing the lower case assembly (109) (1)

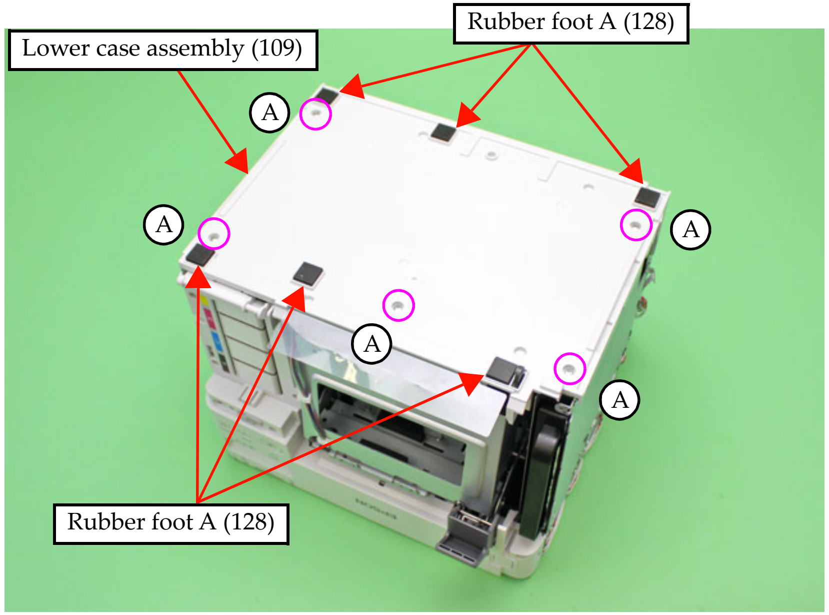


Figure 5-74. Removing the lower case assembly (109) (2)

10. Remove the following parts from the lower case assembly (109).
    - Roll paper cover sheet (108)
    - Bottom absorber (110)
    - Rubber foot A (128) × 5

**Assembly**

☐ When replacing the lower case assembly (109), transfer the roll paper cover sheet (108) from the old lower case assembly (109) to the new one.

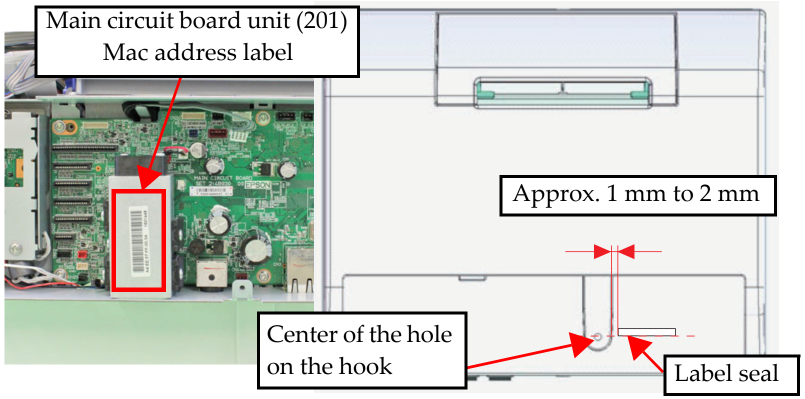
☐ When replacing the rubber foot A (128), wipe the attachment positions on the lower case assembly (109) with alcohol to remove contamination beforehand.

☐ When replacing the bottom absorber (110), wipe the attachment positions for double sided tape on the lower case assembly (109) with alcohol to remove contamination beforehand.

☐ When attaching the roll paper cover sheet (108), align the three positioning holes on the roll paper cover sheet (108) with the three dowels on the lower case assembly (109).

☐ When attaching the bottom absorber (110), align the three positioning holes on the bottom absorber (110) with the three dowels on the lower case assembly (109).

☐ When replacing the lower case assembly (109), confirm the address of the MAC address label attached on the lower case assembly (109) and print it on a label seal, and then attach the seal on the new lower case assembly (109). If you cannot find the MAC address, perform “Printing a Status Sheet” (Page 86) to check the MAC address.


Main circuit board unit (201)
Mac address label
Approx. 1 mm to 2 mm
Center of the hole on the hook
Label seal

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Lower case assembly."

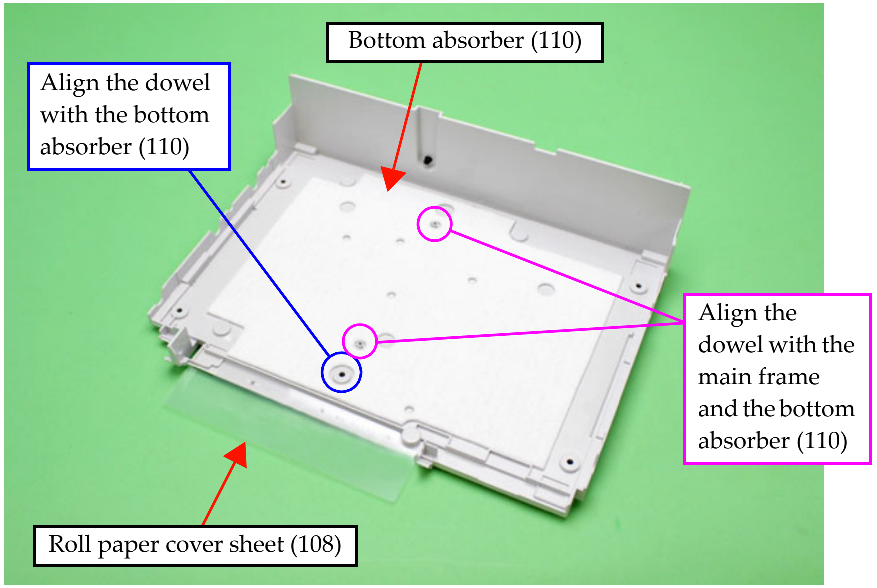

Bottom absorber (110)
Align the dowel with the bottom absorber (110)
Align the dowel with the main frame and the bottom absorber (110)
Roll paper cover sheet (108)

**Figure 5-75. Removing the roll paper cover sheet (108) / bottom absorber (110)**

## Maintenance Box Holder Absorber / CSIC Connector

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the left case (105) / M/B cover (142). (Page 123)
5. Remove the front paper guide assembly (111). (Page 124)
6. Remove the roll paper cover sub assembly (129). (Page 125)
7. Remove the lower case assembly (109). (Page 170)
8. Remove the upper case assembly (103). (Page 131)
9. Remove the Circuit board cover (0006). (Page 132)
10. Disconnect the MB holder FFC (540) from the connector (CN7) on the main circuit board unit (201).
11. Peel off the double sided tape that secure the MB holder FFC (540) to the circuit board frame (0018).
12. Remove the seven earth screws that secure the maintenance box unit frame (0042), and remove the maintenance box unit frame (0042).

    A) SCREW,EARTH,3×6 seven pieces (Ref.# S18)
13. Remove the MB holder FFC (540) from the CSIC connector (550).
14. Loosen the clamp, and remove the waste ink tube (548) from the maintenance box holder.

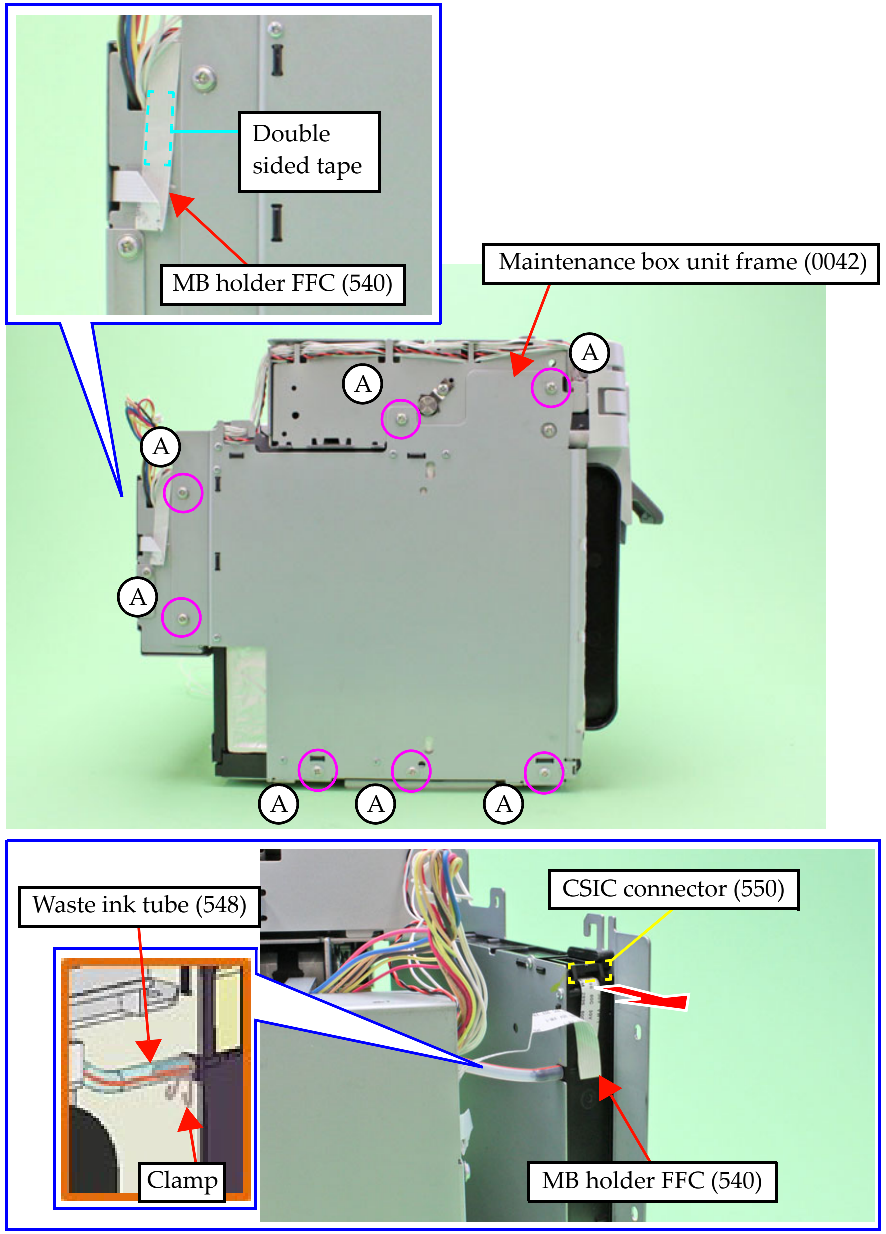
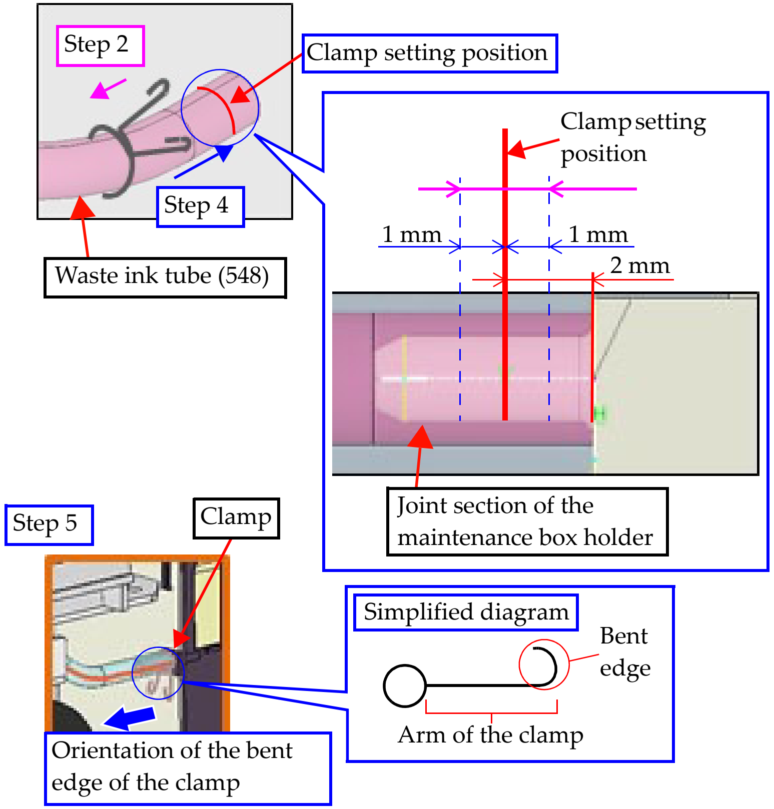

Double sided tape
MB holder FFC (540)
Maintenance box unit frame (0042)
A
A
A
A
A
A
A
Waste ink tube (548)
CSIC connector (550)
Clamp
MB holder FFC (540)

**Figure 5-76. Removing the maintenance box unit frame (0042)**

**Assembly**

☐ When attaching the waste ink tube (548) to the maintenance box holder, do not apply anything on the joint section, and follow the steps below.

1. When the joint section of the maintenance box holder or the waste ink tube (548) is stained with ink or the like, wipe it off with a fluffless cotton swab or a dust free wipe.
2. Set the clamp to the waste ink tube (548) beforehand.
3. Connect the waste ink tube (548) to the joint section of the maintenance box holder.
4. Move the clamp to near the base of the joint section. (2 ± 1 mm from the base of joint section)
5. Set the arm of the clamp in the orientation shown below.


Step 2
Clamp setting position
Step 4
Waste ink tube (548)
Clamp setting position
1 mm
1 mm
2 mm
Joint section of the maintenance box holder
Step 5
Clamp
Simplified diagram
Bent edge
Arm of the clamp
Orientation of the bent edge of the clamp

15. Remove the maintenance box holder absorber (549) from the maintenance box unit frame (0042).
16. Remove the earth screw and eight screws that secure the left frame (0043), and remove the left frame (0043).

   B) C.B.P-TITE SCREW,2 × 5 eight pieces (Ref.# S27)

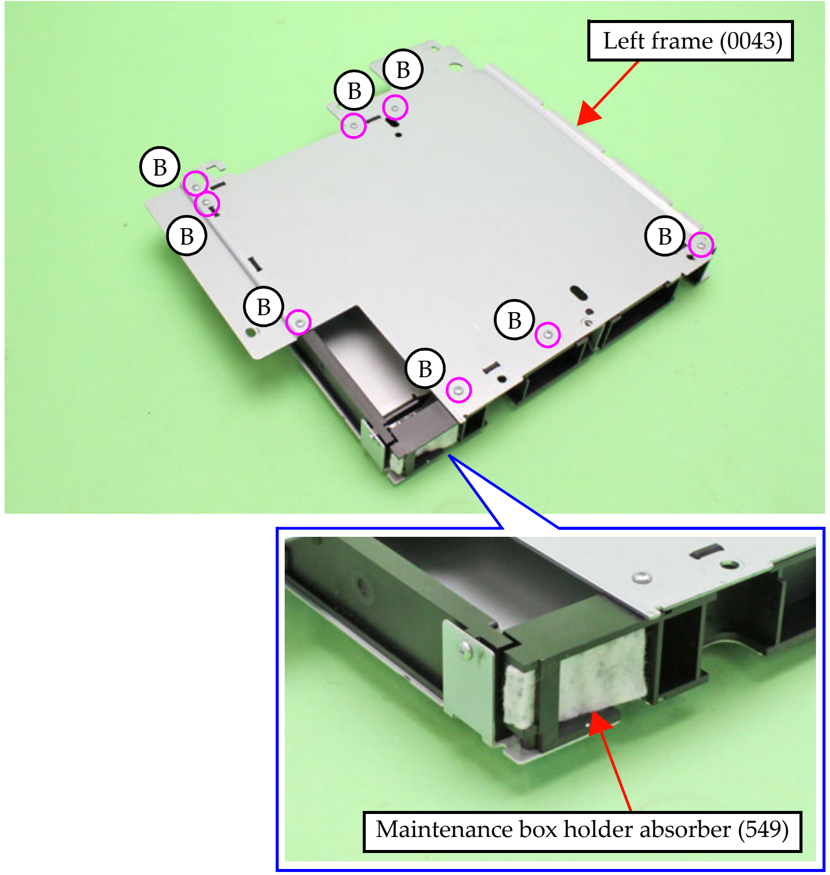

Left frame (0043)
B
B
B
B
B
B
B
B
Maintenance box holder absorber (549)

**Figure 5-77. Removing the maintenance box holder absorber (549)**

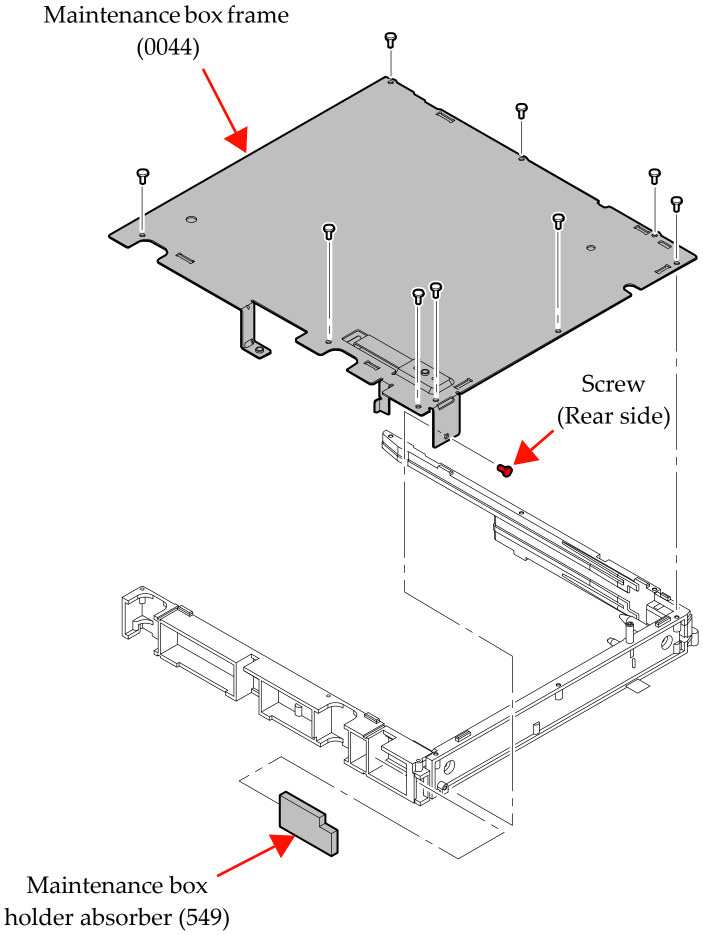
17. Remove the ten screws that secure the maintenance box frame (0044), and remove the maintenance box frame (0044).

    C) C.B.P-TITE SCREW,2 × 5 ten pieces (Ref.# S27)

18. Release the two hooks that secure the CSIC connector (550), and remove the CSIC connector (550).

Assembly

When assembling the maintenance box frame(0044), first tighten the screw on the rear side, then tighten the rest of the screws (nine of them).


Maintenance box frame (0044)
Screw (Rear side)
Maintenance box holder absorber (549)

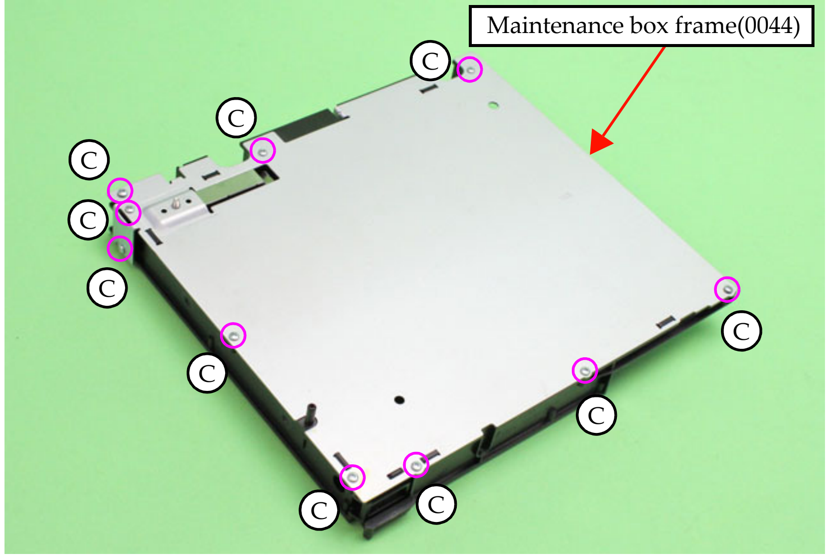

Maintenance box frame(0044)
C
C
C
C
C
C
C
C
C
C

Figure 5-78. Removing the maintenance box frame (0044)

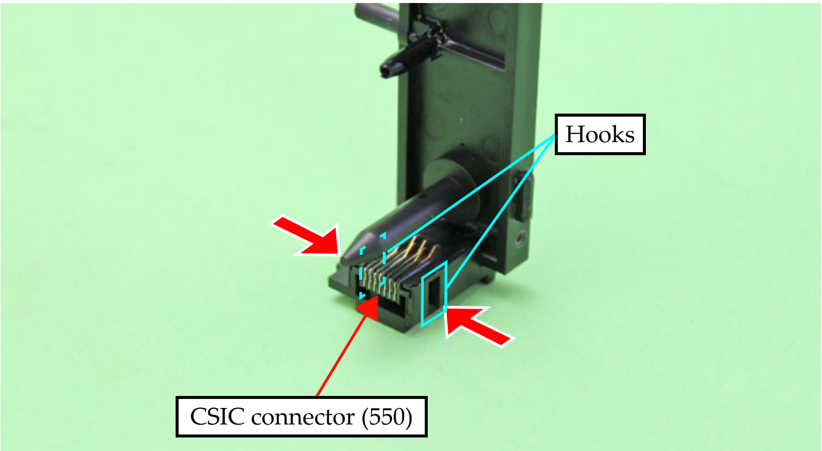

Hooks
CSIC connector (550)

Figure 5-79. Removing the CSIC connector (550)

## Suction Fan

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the left case (105) / M/B cover (142). (Page 123)
5. Remove the front paper guide assembly (111). (Page 124)
6. Remove the roll paper cover sub assembly (129). (Page 125)
7. Remove the lower case assembly (109). (Page 170)
8. Remove the upper case assembly (103). (Page 131)
9. Remove the circuit board cover (0006). (Page 132)
10. Remove the main circuit board unit (201). (Page 138)
11. Remove the AID circuit board assembly (556). (Page 203)
12. Remove the circuit board frame (0018). (Page 140)
13. Remove the two screws that secure the exhaust duct (0024), and remove the exhaust duct (0024).

    A) C.B.S-TITE SCREW,3 × 6 two pieces (Ref.# S10)
14. Remove the two screws that secure the suction fan (507), and remove the suction fan (507).

    B) C.B.SCREW,3 × 40 two pieces (Ref.# S15)

**Assembly**

☐ When installing the suction fan (507), attach it without any gap to the frame.

☐ When installing the exhaust duct (0024), align the two positioning holes on the exhaust duct (0024) with the two dowels on the frame.

☐ When replacing the suction fan (507) with a new one, perform the Fan Rotation Adjustment. (Page 234)

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Suction fan."

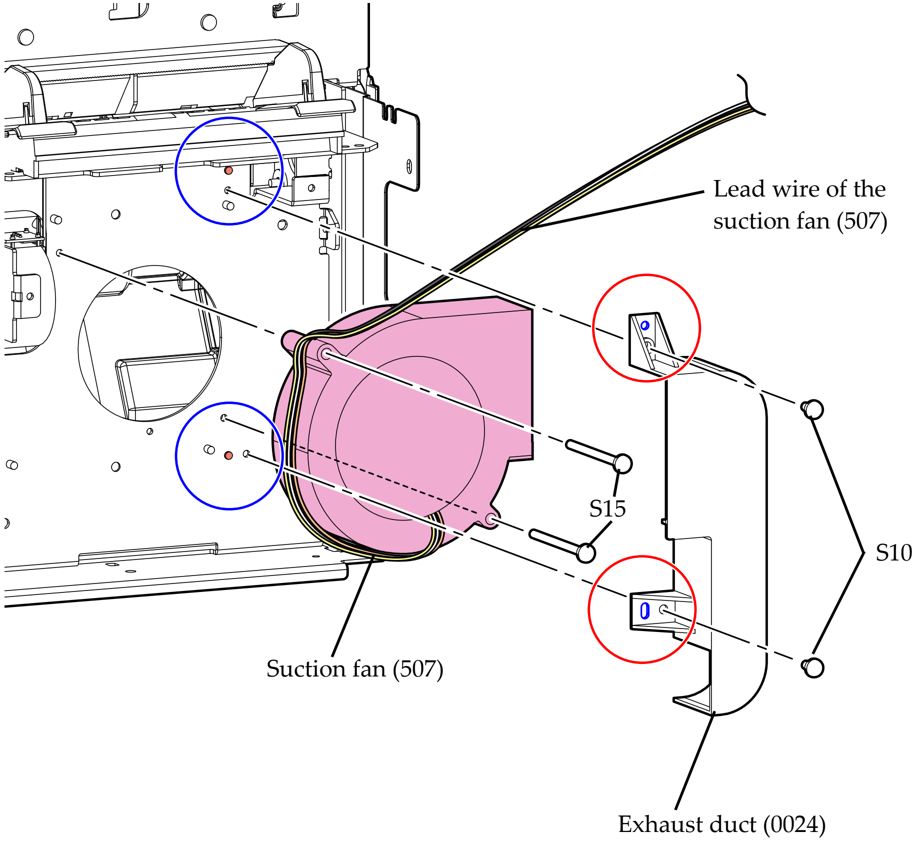


**Figure 5-80. Removing the suction fan (507)**

## *Right Frame*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the A/C case assembly (112). (Page 162)
8. Disconnect the panel board FFC (121) from the connector (CN5) on the main circuit board unit (201).
9. Peel off the double-sided tape (one piece) that secures the panel board FFC (121) to the circuit board frame (0018).
10. Peel off the double-sided tape (four pieces) that secures the panel board FFC (121) to the right frame (0038).
11. Release the lead wire of the I/C cover detector from the I/C cover holder assembly (144) from the three hooks on the right frame (0038).
12. Remove the six earth screws and one screw that secure the right frame (0038), and remove the right frame (0038).

| | | |
|---|---|---|
| A) EARTH SCREW,3 × 6 | six pieces | (Ref.# S18) |
| B) C.B.S-TITE SCREW,3 × 6 | one piece | (Ref.# S10) |

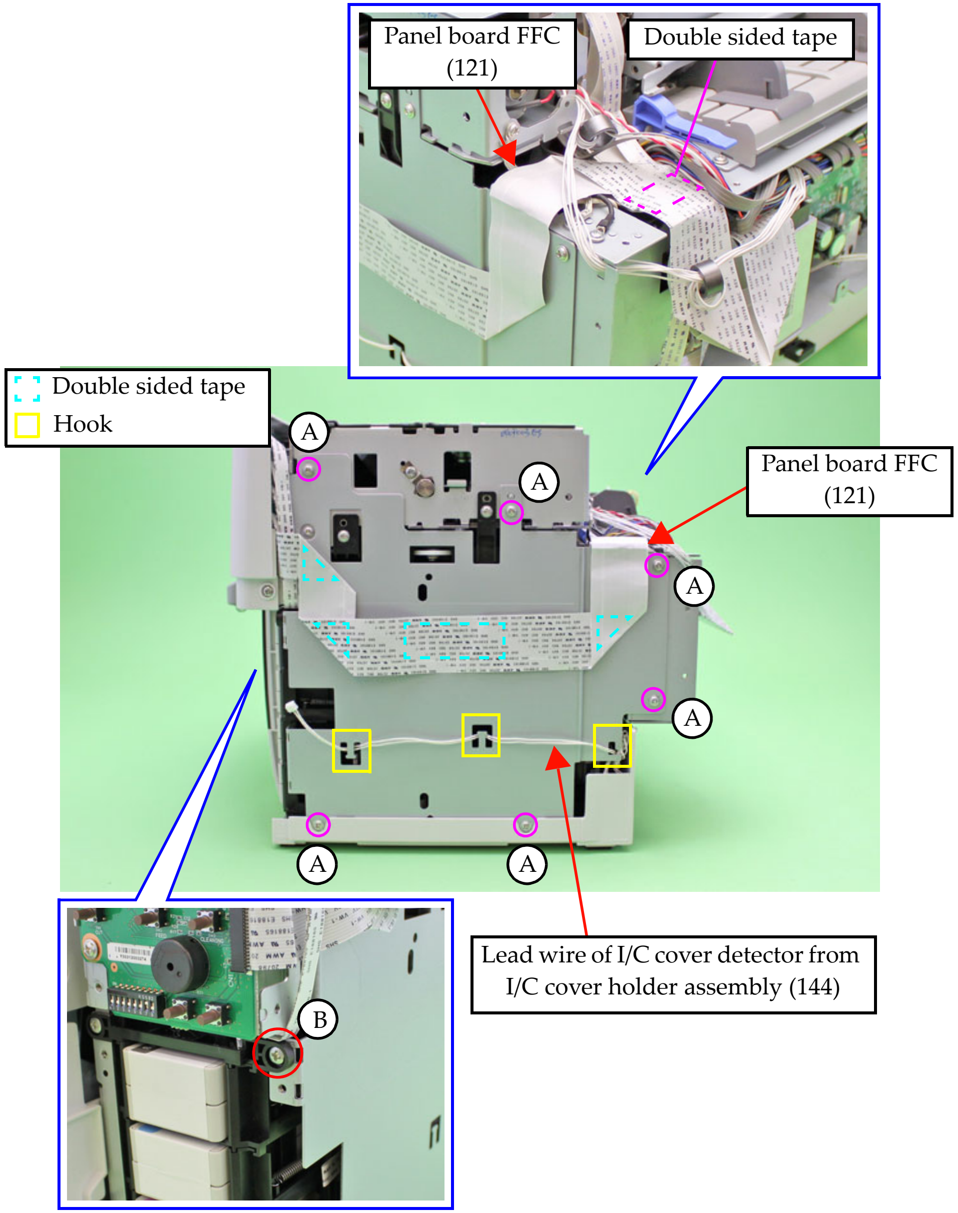

Panel board FFC (121)
Double sided tape
Double sided tape
Hook
A
A
A
A
A
A
Panel board FFC (121)
Lead wire of I/C cover detector from I/C cover holder assembly (144)
B

**Figure 5-81. Removing the right frame (0038)**

Assembly

☐ When applying the panel board FFC (121) on the right frame (0038), apply the FFC while aligning it with the marking line on the right frame (0038).

☐ Apply the panel board FFC (121) on the position shown in Figure 5-80 with double-sided tape. (Figure 5-81)

☐ For routing of the lead wire of the I/C cover detector from the I/C cover holder assembly (144), see page 200, " Right Side.".

☐ After routing the lead wire of the I/C cover detector from the I/C cover holder assembly (144), twist the slack of the lead wire at the point shown in the figure, then insert the twisted slack into the space in the direction of the arrow.

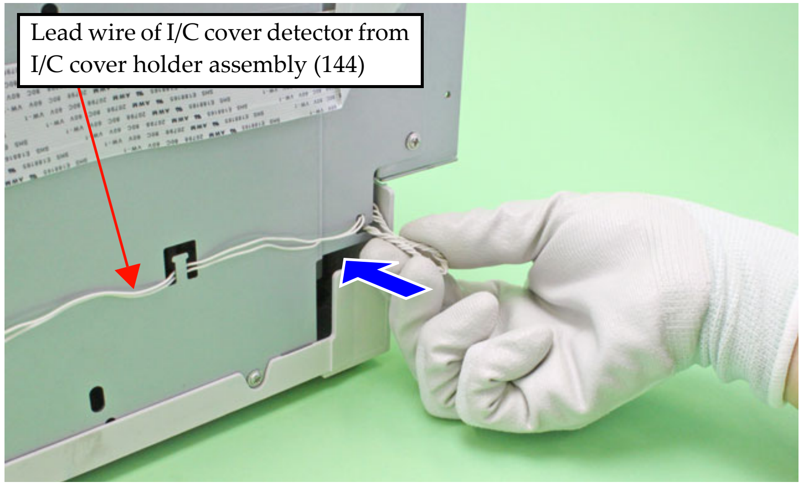

Lead wire of I/C cover detector from I/C cover holder assembly (144)

**Figure 5-82. Routing the lead wire of the I/C cover detector**

## *Supply Duct Unit*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the right frame (0038). (Page 177)
8. Remove the top frame (0007). (Page 141)
9. Remove the main circuit board unit (201). (Page 138)
10. Remove the AID circuit board assembly (556). (Page 136)
11. Remove the Circuit board frame (0018). (Page 140)
12. Remove the FFC guide (0033). (Page 148)
13. Remove the valve head assembly (501). (Page 149)

CAUTION

When removing the tube, be careful not to get your hands dirty with spilled ink.

14. Remove the two screws and the two nuts that secure the IC joint tube assembly (526) to the supply duct unit (524), and remove the IC joint tube assembly (526).

| | | |
|---|---|---|
| A) C.P.(S-P1)SCREW,2 × 10 | two pieces | (Ref.# S25) |
| B) Nut | two pieces | (Ref.# N01) |

Assembly

Use a torque driver with the torque given below when tightening the screws (S25) securing the IC joint tube assembly (526).
0.1 [N·m] ~ 0.2 [N·m] (1 ~ 2 [kgf·cm])

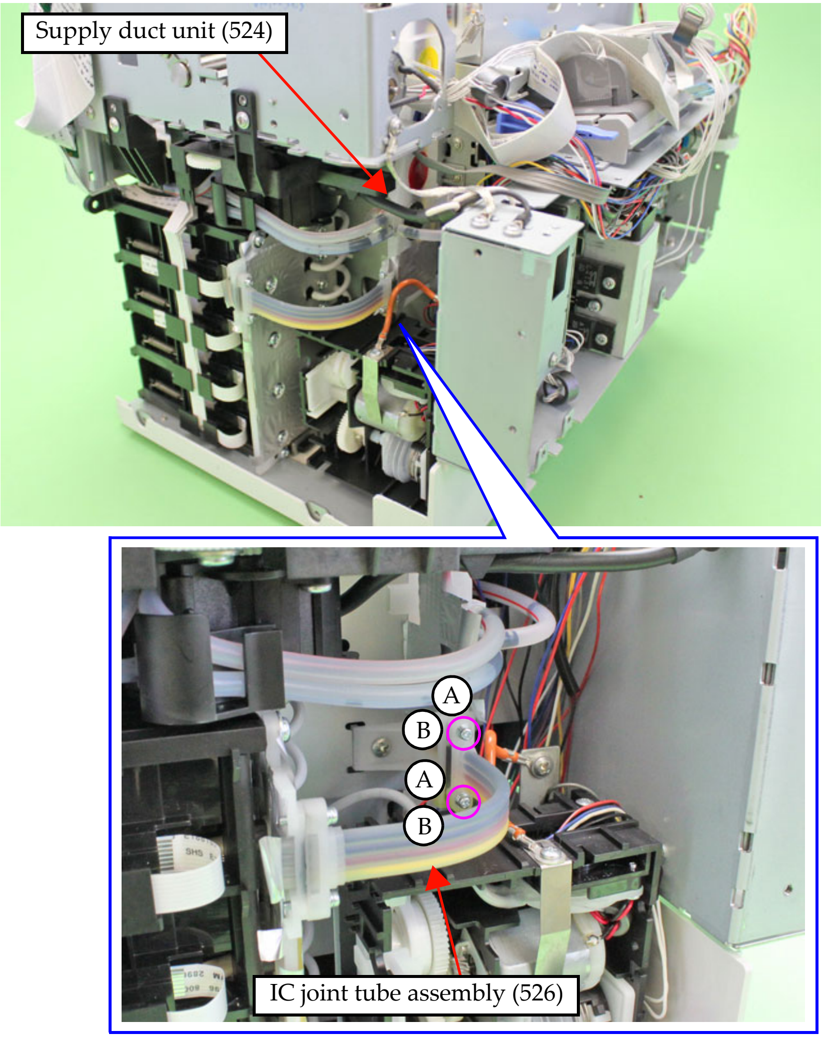


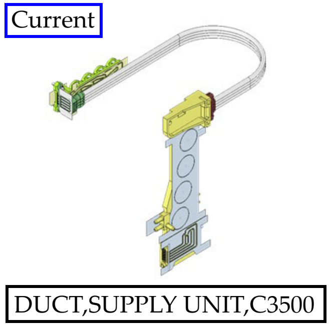
**Figure 5-83. Removing the supply duct unit (524) (1)**

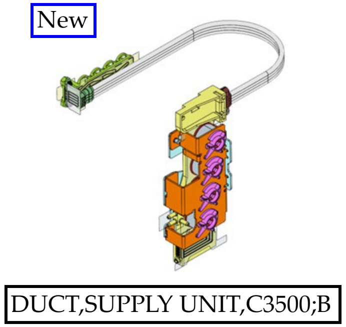
15. Remove the joint seal rubber (547) from the supply duct unit (524).
16. Remove the two waste ink tubes of the IS pump unit (518) from the supply duct unit (524) by loosening each clamp.
17. Remove the waste ink tube (548) from the supply duct unit (524) by loosening the clamp.
18. Remove the screw that secures the supply duct unit (524), and remove the supply duct unit (524) upward.

    C) C.B.S-TITE SCREW,3 × 6 one piece (Ref.# S10)

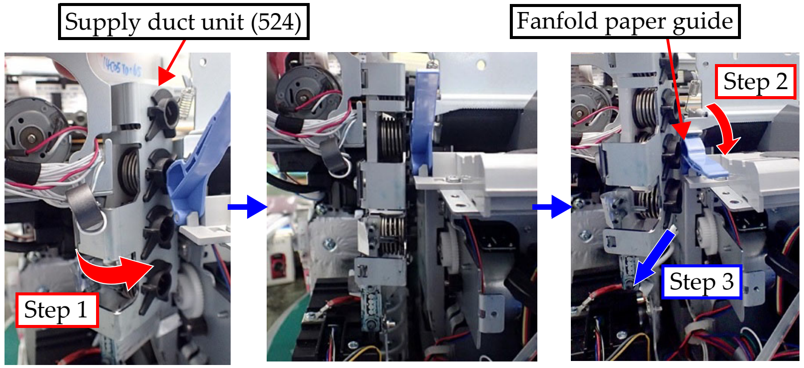
**Check**

There are two types of supply duct unit(524).
(Reference: Technical Information No. TIE03616)


Current
DUCT,SUPPLY UNIT,C3500


New
DUCT,SUPPLY UNIT,C3500;B

Disassemble the new type supply duct unit (524) in the procedure given below.
1. Change the direction of the supply duct unit (524).
2. Move the fanfold paper guide to the lock position.
3. Remove the supply duct unit (524) in the direction of the arrow.


Supply duct unit (524)
Fanfold paper guide
Step 2
Step 1
Step 3

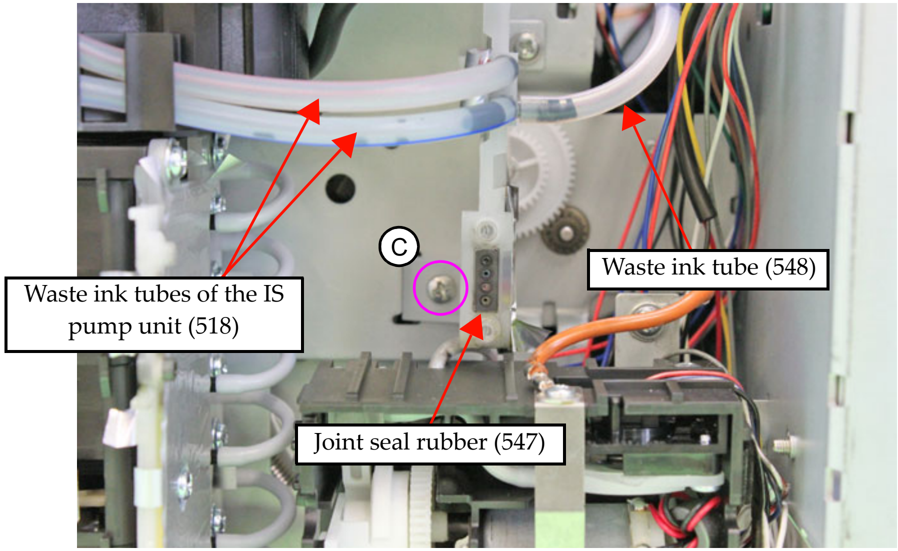

C
Waste ink tubes of the IS pump unit (518)
Waste ink tube (548)
Joint seal rubber (547)

**Figure 5-84. Removing the supply duct unit (524) (2)**

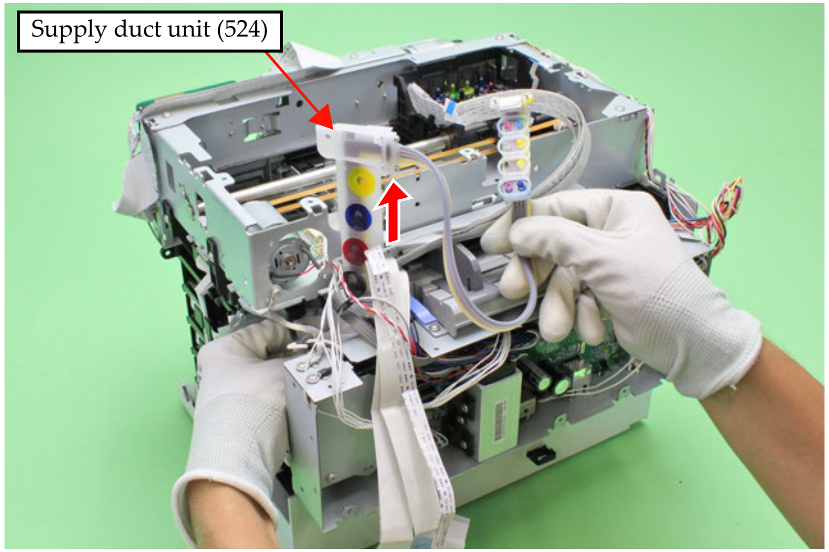

Supply duct unit (524)

**Figure 5-85. Removing the supply duct unit (524) (3)**

Assembly

☐ When installing the valve head assembly (501), apply the cleaning fluid (CR02) on the needles on the duct of the valve head assembly (501) beforehand.

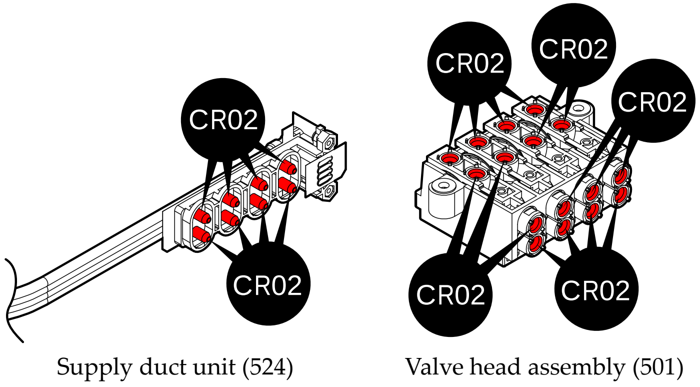


**Figure 5-86. Cleaning fluid (CR02)**

☐ When attaching the joint seal rubber (547) on the supply duct unit (524), take care not to let the joint seal rubber (547) come over the protruded sections of the supply duct unit (524).

☐ When attaching the waste ink tube (548) on the supply duct unit (524), do not apply anything on the joint section.

☐ When attaching the two waste ink tubes of the IS pump unit (518) on the supply duct unit (524), do not apply anything on the joint section.

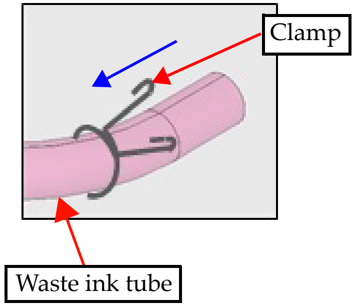
☐ When the joint section of the supply duct unit (524), joint section of two ink waste tubes of the IS pump unit (518), or the joint section of the waste ink tube (548) is stained with ink or the like, wipe it off with a fluffless cotton swab or a dust free wipe.

Assembly

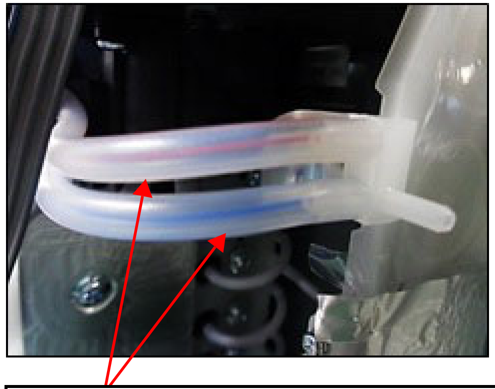
☐ Attaching the waste ink tube of the IS pump unit (518).

1. When the joint section of the supply duct unit (524) or the joint section of the waste ink tube of the IS pump unit (518) is stained with ink or the like, wipe it off with a fluffless cotton swab or a dust free wipe.
2. Set the clamp to the waste ink tube of the IS pump unit (518) beforehand.
3. Connect the waste ink tube of the IS pump unit (518) to the joint section of the supply duct unit (524).

Step 2



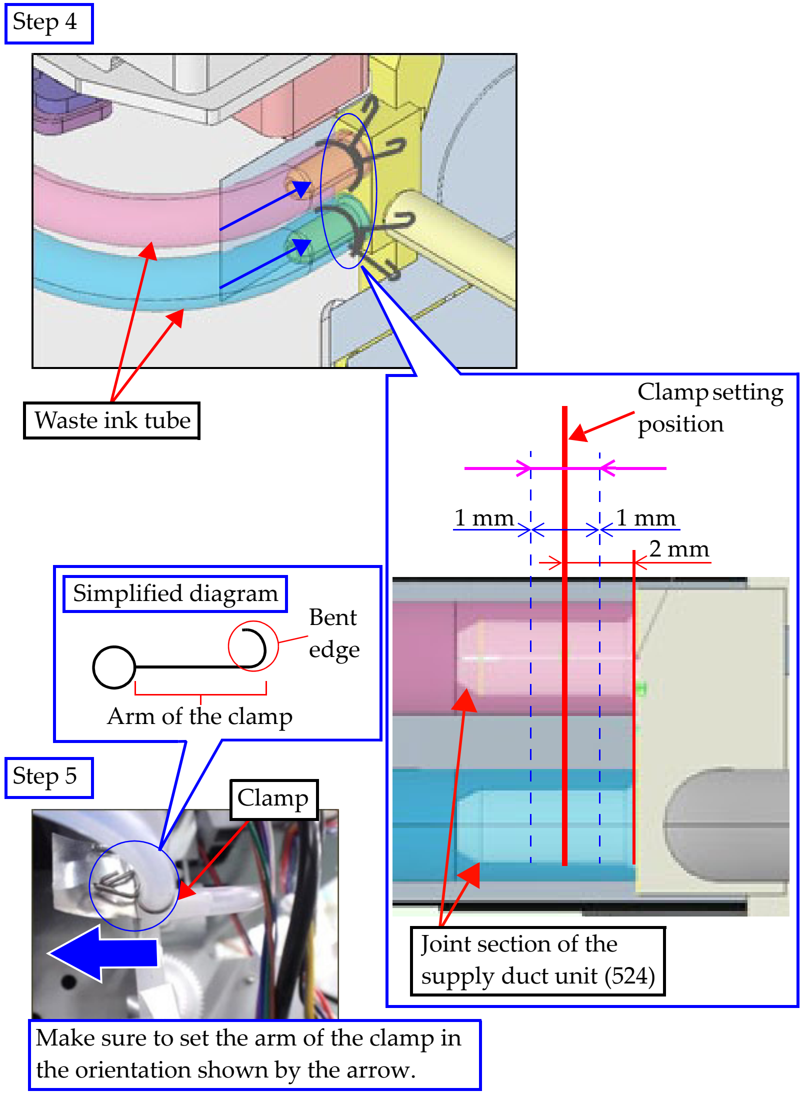
Step 3



Make sure to connect the red tube to the upper ink path and the blue tube to the lower ink path.

**Assembly**

4. Move the clamp to near the base of the joint section. (2 ± 1 mm from the base of joint section)
5. Set the arm of the clamp in the orientation shown below.


Step 4
Waste ink tube
Clamp setting position
1 mm
1 mm
2 mm
Joint section of the supply duct unit (524)
Simplified diagram
Bent edge
Arm of the clamp
Step 5
Clamp

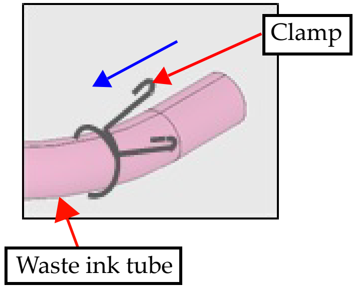
Make sure to set the arm of the clamp in the orientation shown by the arrow.

**Assembly**

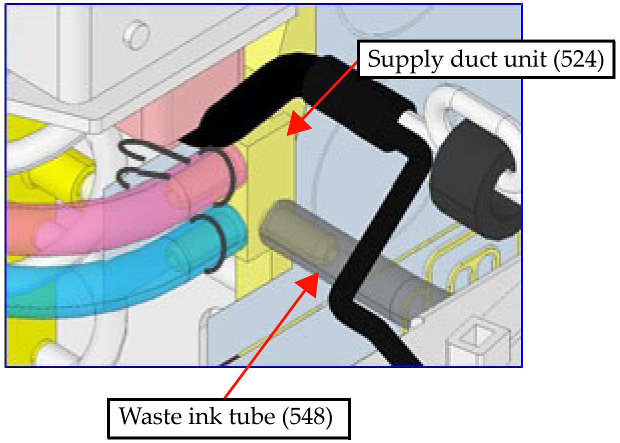
☐ Attaching the waste ink tube (548)

1. When the joint section of the supply duct unit (524) or the joint section of the waste ink tube (548) is stained with ink or the like, wipe it off with a fluffless cotton swab or a dust free wipe.
2. Set the clamp to the waste ink tube (548) beforehand.
3. Connect the waste ink tube (548) to the joint section of the supply duct unit (524).

Step 2


Clamp
Waste ink tube

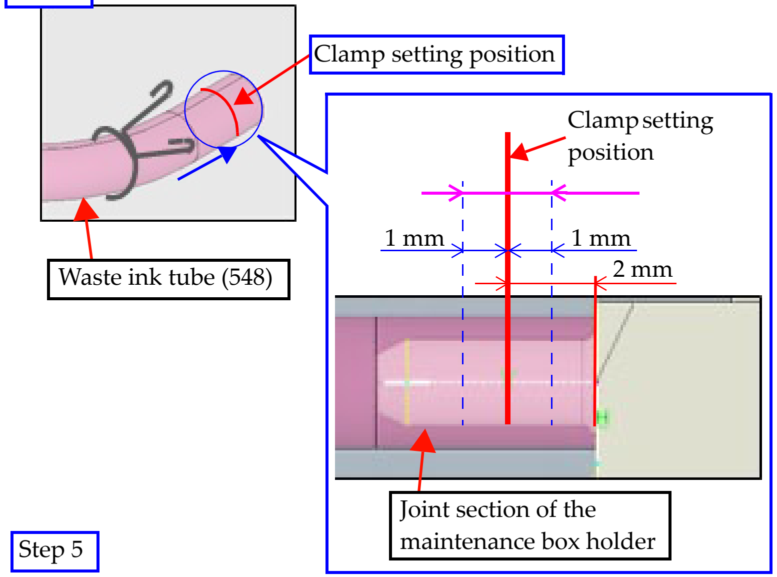
Step 3


Supply duct unit (524)
Waste ink tube (548)

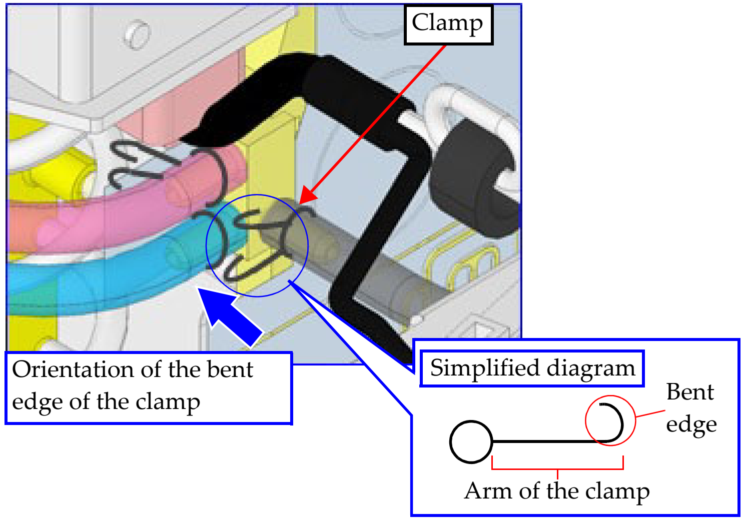
**Assembly**

4. Move the clamp to near the base of the joint section. (2 ± 1 mm from the base of joint section)
5. Set the arm of the clamp in the orientation shown below.

Step 4


Clamp setting position
Clamp setting position
1 mm
1 mm
2 mm
Waste ink tube (548)
Joint section of the maintenance box holder

Step 5


Clamp
Orientation of the bent edge of the clamp
Simplified diagram
Bent edge
Arm of the clamp

## *Pressure Pump Unit*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the right frame (0038). (Page 177)
8. Remove the main circuit board unit (201). (Page 138)
9. Remove the AID circuit board assembly (556). (Page 136)
10. Remove the circuit board frame (0018). (Page 140)
11. Remove the front paper guide assembly (111). (Page 124)
12. Remove the roll paper cover sub assembly (129). (Page 125)
13. Remove the lower case assembly (109). (Page 170)
14. Remove the pressure pump tube of the pressure pump unit (551) from the cartridge holder unit (546).
15. Release the lead wire of the I/C cover detector of the I/C cover holder assembly (144) from the cutout of the right strengthen plate (0029).
16. Release the lead wire of the I/C cover detector of the I/C cover holder assembly (144) from the hook of the pressure pump unit (551).
17. Remove the earth screw that secures the earth wire of the pressure pump unit (551) to the pressure holder sub assembly (0045).

    A) EARTH SCREW,3 × 6 one piece (Ref.# S18)

18. Rotate the gear of the pressure pump unit (551) to compress the pump, and remove the two screws that secure the pressure pump unit (551), then remove the pressure pump unit (551).

    B) C.P.SCREW,3 × 8 two pieces (Ref.# S26)

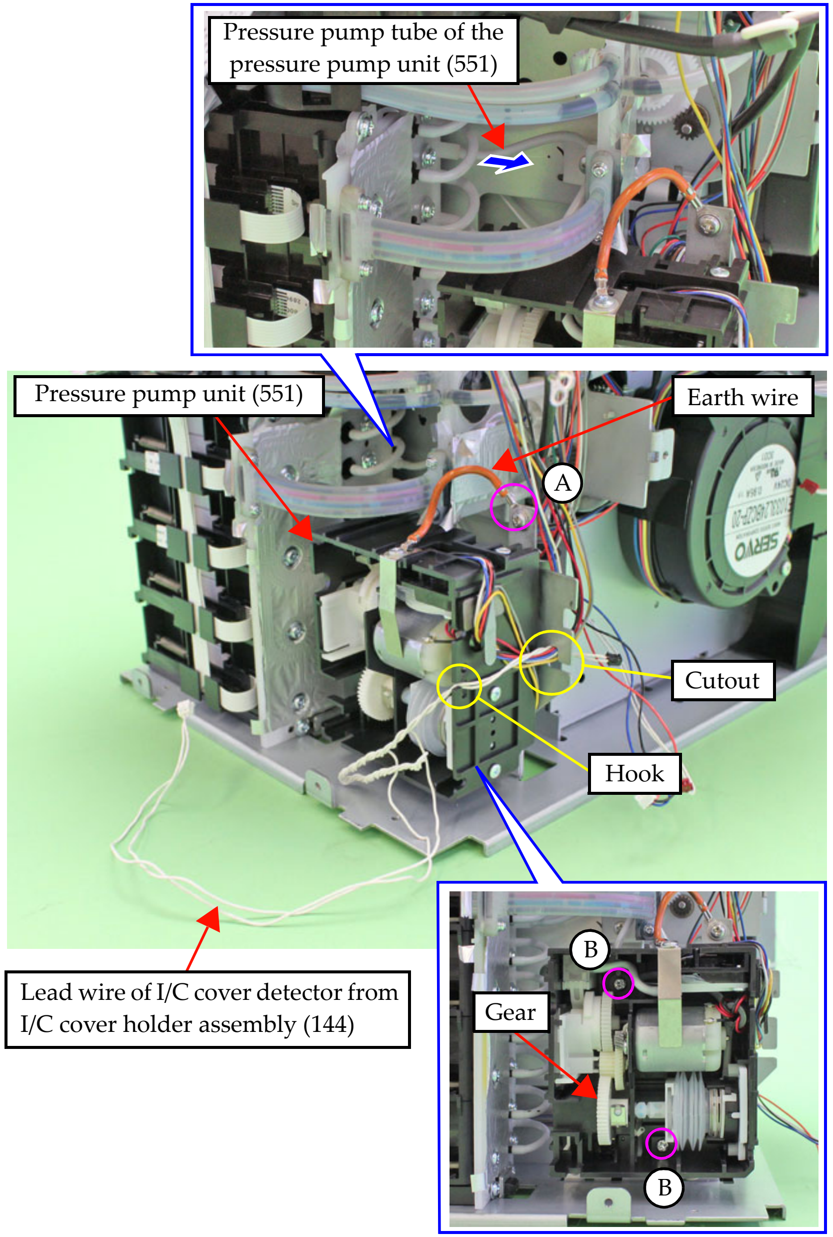

Pressure pump tube of the pressure pump unit (551)
Pressure pump unit (551)
Earth wire
A
Cutout
Hook
Lead wire of I/C cover detector from I/C cover holder assembly (144)
B
Gear
B

**Figure 5-87. Removing the pressure pump unit (551)**

## Cartridge Holder Unit

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the right frame (0038). (Page 177)
8. Remove the A/C case assembly (112). (Page 162)

> CAUTION
>
> When removing the tube, be careful not to get your hands dirty with spilled ink.

9. Remove the pressure pump tube of the pressure pump unit (551) from the cartridge holder unit (546).
10. Remove the two screws and the two nuts that secure the IC joint tube assembly (526) to the cartridge holder unit (546), and remove the IC joint tube assembly (526).

| | | |
|---|---|---|
| A) C.P.(S-P1)SCREW,2 × 10 | two pieces | (Ref.# S25) |
| B) Nut | two pieces | (Ref.# N01) |

> Assembly
>
> Use a torque driver with the torque given below when tightening the screws (S25) securing the IC joint tube assembly (526).
> 0.1 [N·m] ~ 0.2 [N·m] (1 ~ 2 [kgf·cm])

11. Remove the joint seal rubber (547) from the cartridge holder unit (546).
12. Remove the screw that secures the cartridge holder unit (546), and remove the cartridge holder unit (546).

| | | |
|---|---|---|
| C) C.B.S-TITE SCREW,3 × 6 | one piece | (Ref.# S10) |

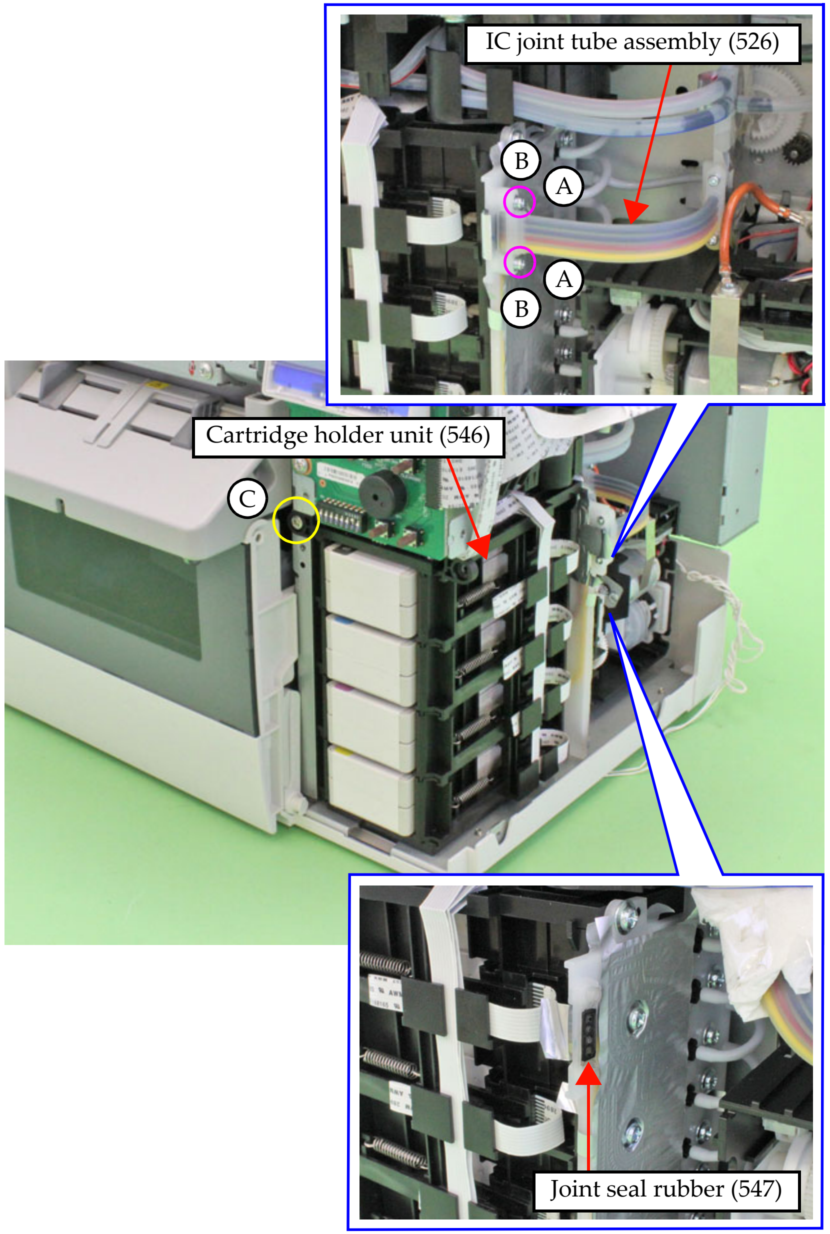


**Figure 5-88. Removing the cartridge holder unit (546)**

Adjustment

Adjustments must be carried out after any of the following part have been replaced.

- ☐ page 206, " Cartridge holder unit."

## Platen Sub Unit

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the A/C case assembly (112). (Page 162)
8. Remove the right frame (0038). (Page 177)
9. Remove the main circuit board unit (201). (Page 138)
10. Remove the AID circuit board assembly (556). (Page 136)
11. Remove the cartridge holder unit (546). (Page 185)
12. Remove the front paper guide assembly (111) / Fixed blade (534). (Page 124)
13. Remove the roll paper cover sub assembly (129). (Page 125)
14. Remove the supply duct unit (524). (Page 179)
15. Remove the pressure pump unit (551). (Page 184)
16. Peel off the acetate tape that secures the lead wire of the platen sub unit (511).
17. Release the lead wire of the platen sub unit (511) from the cable clamp (505) of the right strengthen plate (0029), the mini clamp (504) of the main frame, and the two cable clamp (505) of the platen frame unit.
18. Release the lead wire of the platen sub unit (511) from the rib of the frame.
19. Remove the ferrite core from the thick lead wires of the platen sub unit (511).
20. Pull out the lead wires of the platen sub unit (511) from the space between the frame and the right strengthen plate (0029).

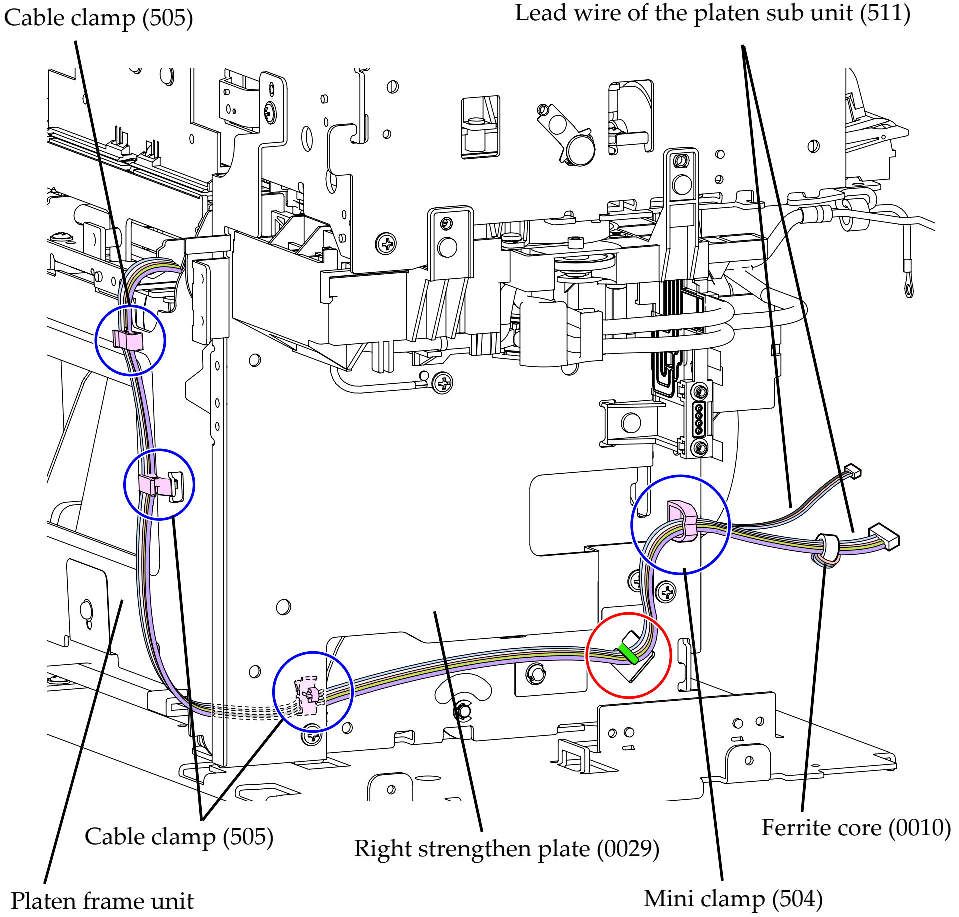


**Figure 5-89. Removing the platen sub unit (511) (1)**

21. Open the roll paper cover.
22. Remove the three screws that secure the platen sub unit (511).

    A) C.B.S-TITE SCREW,3 × 6 three pieces (Ref.# S10)

23. Pull out the lead wires of the platen sub unit (511) from the space between the platen frame unit and the link lever, then remove the platen sub unit (511).

**Assembly**

- ☐ When installing the platen sub unit (511), route the lead wires of the platen sub unit (511) through the space between the platen frame unit and the link lever. (Figure 5-90)
- ☐ For routing of the lead wires of the platen sub unit (511), see page 197 " Routing the Cables".

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

- ☐ page 206, " Platen sub unit."

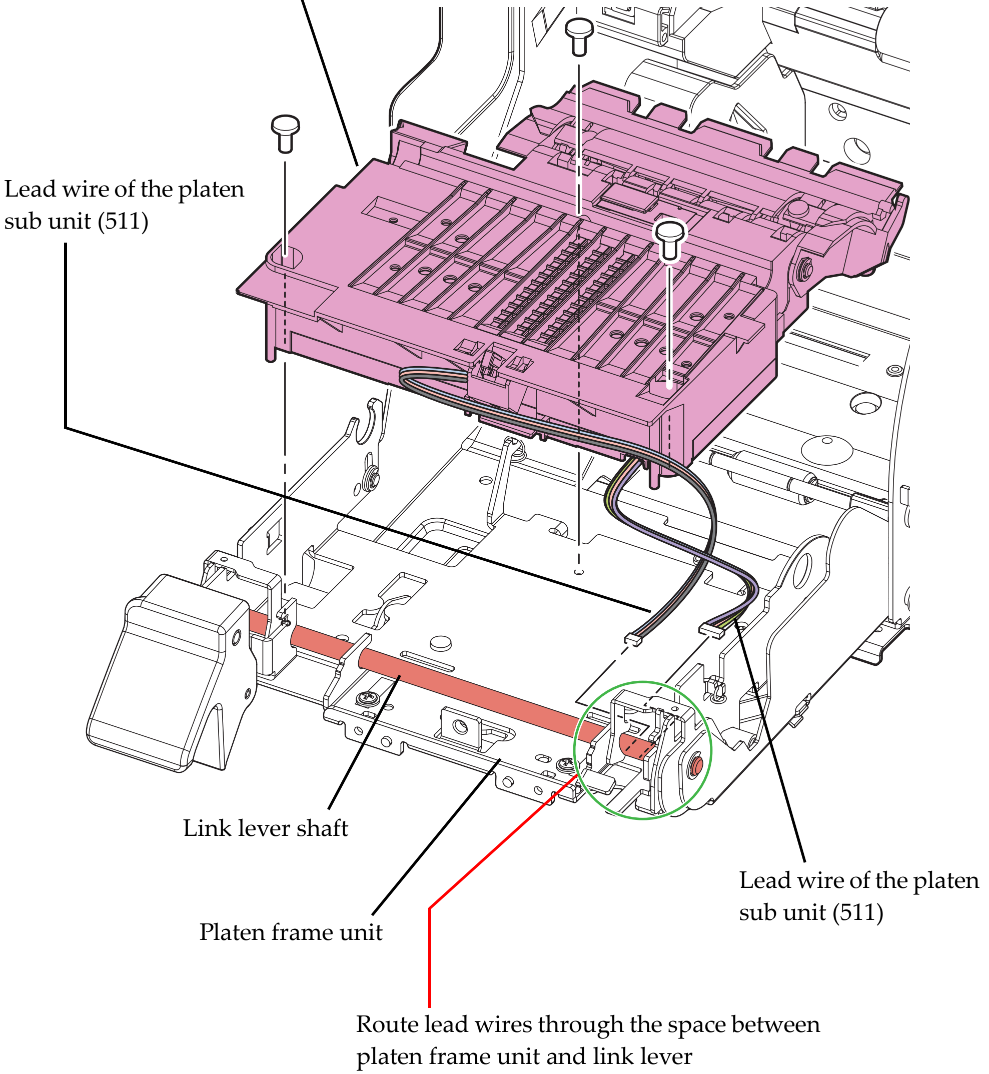

Platen sub unit (511)
Lead wire of the platen sub unit (511)
Link lever shaft
Platen frame unit
Lead wire of the platen sub unit (511)
Route lead wires through the space between platen frame unit and link lever

**Figure 5-90. Removing the platen sub unit (511) (2)**

## *IS Pump Unit*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the right frame (0038). (Page 177)
8. Remove the A/C case assembly (112). (Page 162)
9. Remove the cartridge holder unit (546). (Page 185)
10. Remove the AID circuit board assembly (556). (Page 136)
11. Remove the pressure pump unit (551). (Page 184)
12. Disconnect the lead wire of the IS pump unit (518) from the connector (CN19) on the main circuit board unit (201).
13. Remove the two tubes of the IS pump unit (518) from the supply duct unit (524) by loosening each clamp.
14. Remove the two earth screws that secure the two earth wires of the IS pump unit (518).

    A) EARTH SCREW,3 × 6 two pieces (Ref.# S18)

15. Remove the two screws that secure the IS pump unit (518).

    B) C.B.S-TITE SCREW,3 × 6 two pieces (Ref.# S10)

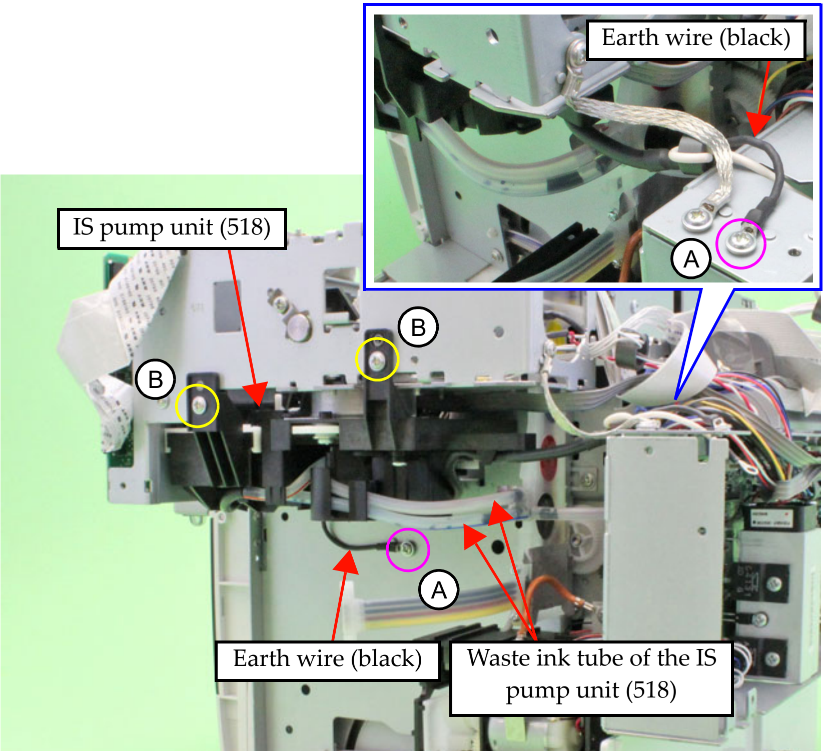


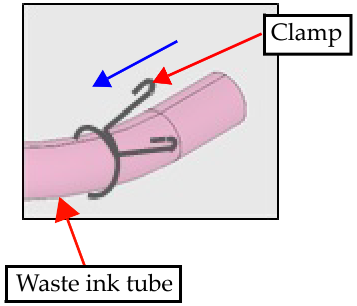
**Figure 5-91. Removing the IS pump unit (518) (1)**

**Assembly**

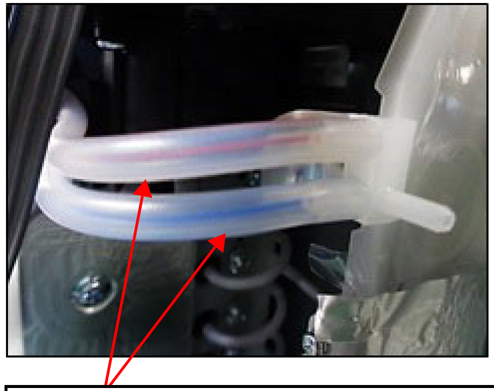
☐ Attaching the waste ink tube of the IS pump unit (518).

1. When the joint section of the supply duct unit (524) or the joint section of the waste ink tube of the IS pump unit (518) is stained with ink or the like, wipe it off with a fluffless cotton swab or a dust free wipe.
2. Set the clamp to the waste ink tube of the IS pump unit (518) beforehand.
3. Connect the waste ink tube of the IS pump unit (518) to the joint section of the supply duct unit (524).

Step 2


Clamp
Waste ink tube

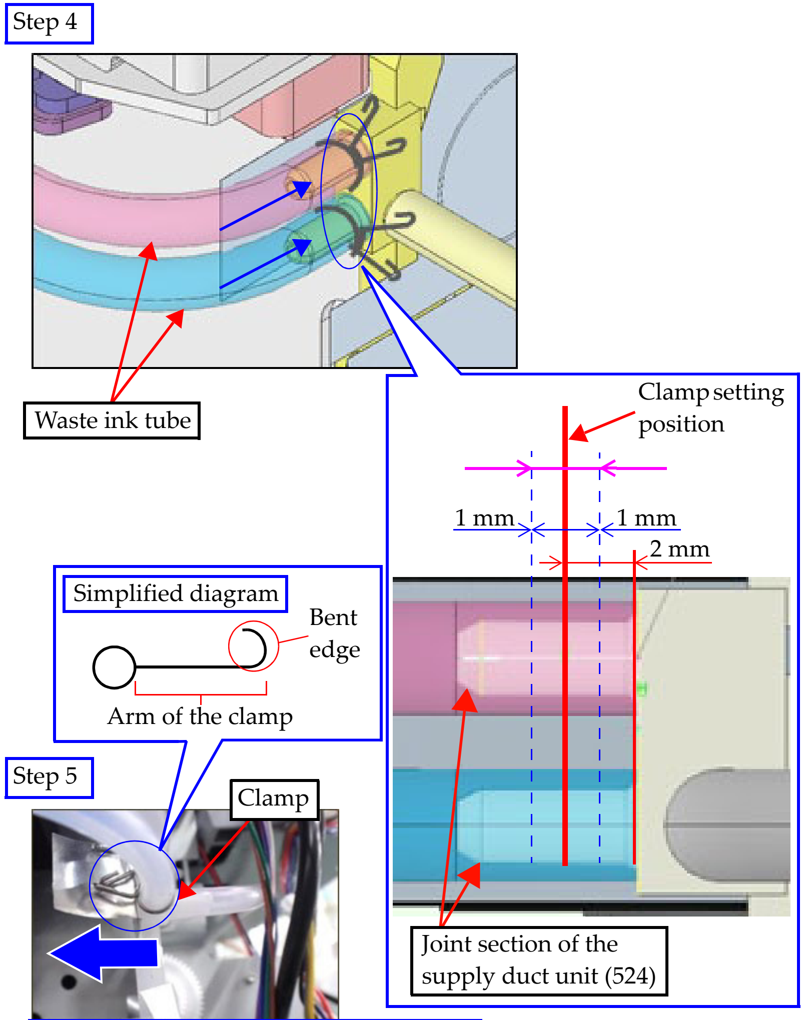
Step 3



Make sure to connect the red tube to the upper ink path and the blue tube to the lower ink path.

**Assembly**

4. Move the clamp to near the base of the joint section. (2 ± 1 mm from the base of joint section)
5. Set the arm of the clamp in the orientation shown below.


Step 4
Waste ink tube
Clamp setting position
1 mm
1 mm
2 mm
Joint section of the supply duct unit (524)
Simplified diagram
Bent edge
Arm of the clamp
Step 5
Clamp

Make sure to set the arm of the clamp in the orientation shown by the arrow.

16. Release the positioning rib on the IS pump unit (518) from the hole on the right strengthen plate (0029), and remove the IS pump unit (518) in the direction of the arrow.

**Assembly**

☐ When installing the IS pump unit (518), align the dowel on the carriage unit (0005) with the positioning hole on the IS pump unit (518).

☐ When securing the earth wire (black) of the IS pump unit (518) on the right strengthen plate (0029), make sure the terminal of the wire is set within the range specified below.

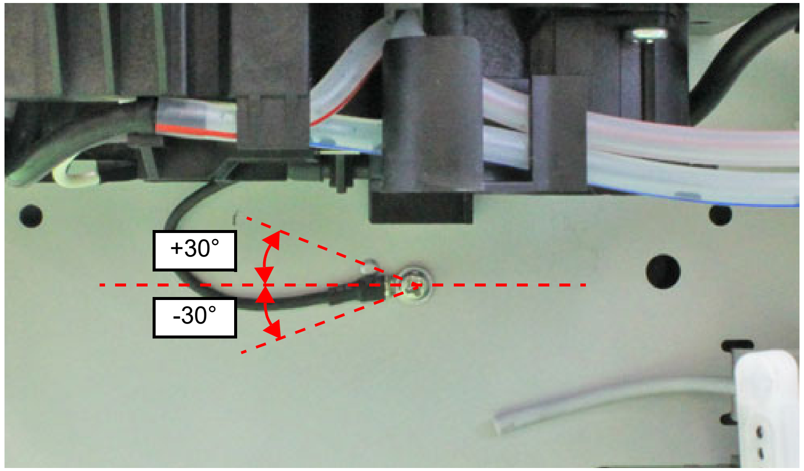


**Figure 5-92. Terminal position of the earth wire (black)**

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " IS pump unit."

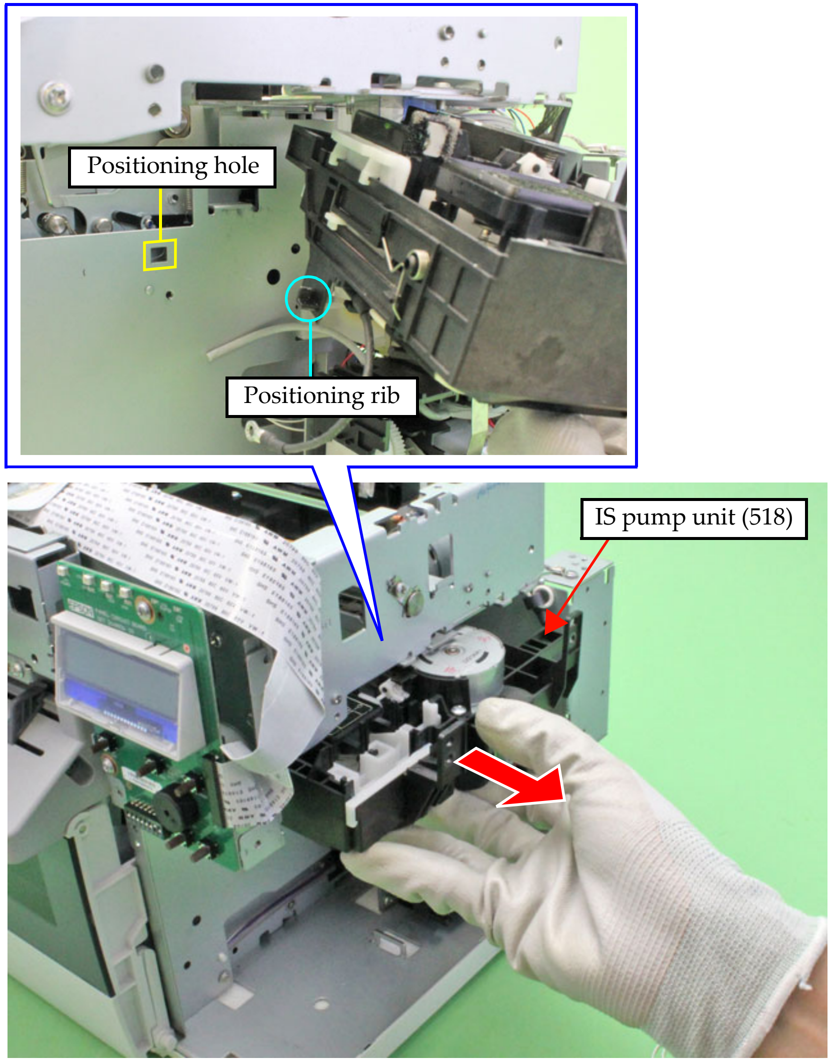


**Figure 5-93. Removing the IS pump unit (518) (2)**

## Right Strengthen Plate

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the right frame (0038). (Page 177)
8. Remove the A/C case assembly (112). (Page 162)
9. Remove the cartridge holder unit (546). (Page 185)
10. Remove the pressure pump unit (551). (Page 199)
11. Remove the IS pump unit (518). (Page 189)
12. Remove the main circuit board unit (201). (Page 197)
13. Remove the AID circuit board assembly (556). (Page 136)
14. Remove the circuit board frame (0018). (Page 140)
15. Remove the left case (105) / M/B cover (142). (Page 123)
16. Remove the front paper guide assembly (111). (Page 124)
17. Remove the roll paper cover sub assembly (129). (Page 125)
18. Remove the lower case assembly (109). (Page 170)
19. Remove the two earth screws that secure the pressure holder sub assembly (0045), and remove the pressure holder sub assembly (0045) with the pressure pump unit (551).

    A) EARTH SCREW,3 × 6 two pieces (Ref.# S18)

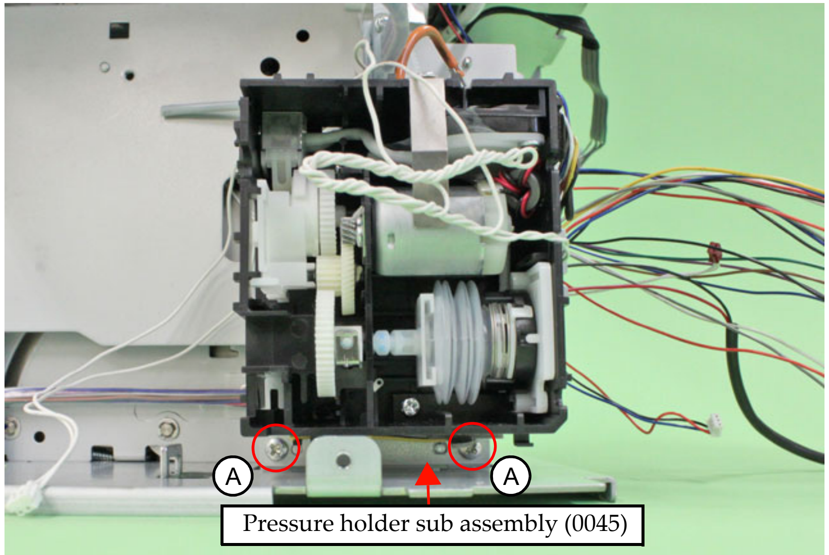


**Figure 5-94. Removing the pressure holder sub assembly (0045)**

20. Remove the six screws that secure the right strengthen plate (0029).

    B) EARTH SCREW,3 × 6 six pieces (Ref.# S18)

21. Release the lead wire of the platen sub unit (511) from the cable clamp (505) of the right strengthen plate (0029), and remove the right strengthen plate (0029).

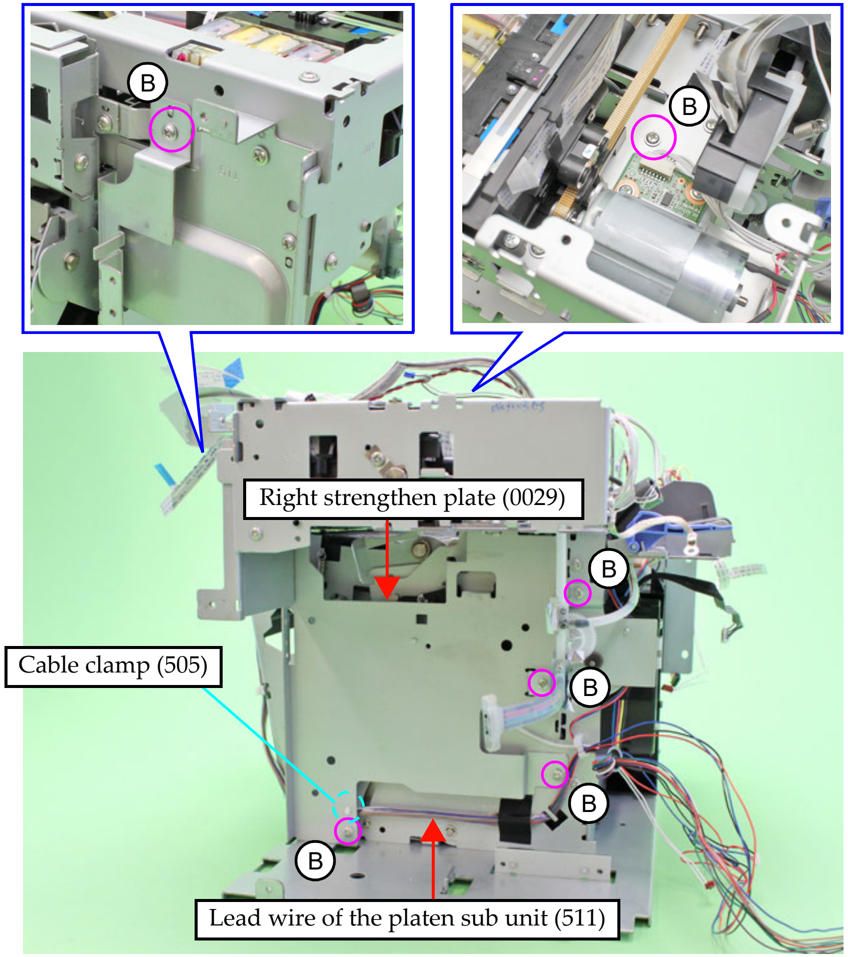

B
B
Right strengthen plate (0029)
B
Cable clamp (505)
B
B
B
Lead wire of the platen sub unit (511)

**Figure 5-95. Removing the right strengthen plate (0029)**

## *Roll Paper Cover Open Detect Sub Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the right frame (0038). (Page 177)
8. Remove the A/C case assembly (112). (Page 162)
9. Remove the cartridge holder unit (546). (Page 185)
10. Remove the pressure pump unit (551). (Page 184)
11. Remove the IS pump unit (518). (Page 189)
12. Remove the main circuit board unit (201). (Page 197)
13. Remove the AID circuit board assembly (556). (Page 136)
14. Remove the circuit board frame (0018). (Page 140)
15. Remove the left case (105) / M/B cover (142). (Page 123)
16. Remove the front paper guide assembly (111). (Page 124)
17. Remove the roll paper cover sub assembly (129). (Page 125)
18. Remove the lower case assembly (109). (Page 170)
19. Remove the right strengthen plate (0029). (Page 192)
20. Peel off the acetate tape (W18 mm × L20 mm), and release the lead wire of the roll paper cover open detect sub assembly (506) from the two hooks of the frame and the mini clamp (504).
21. Remove the switch screw, and remove the roll paper cover open detect sub assembly (506).

    A) SCREW,SWITCH one piece (Ref.# S14)

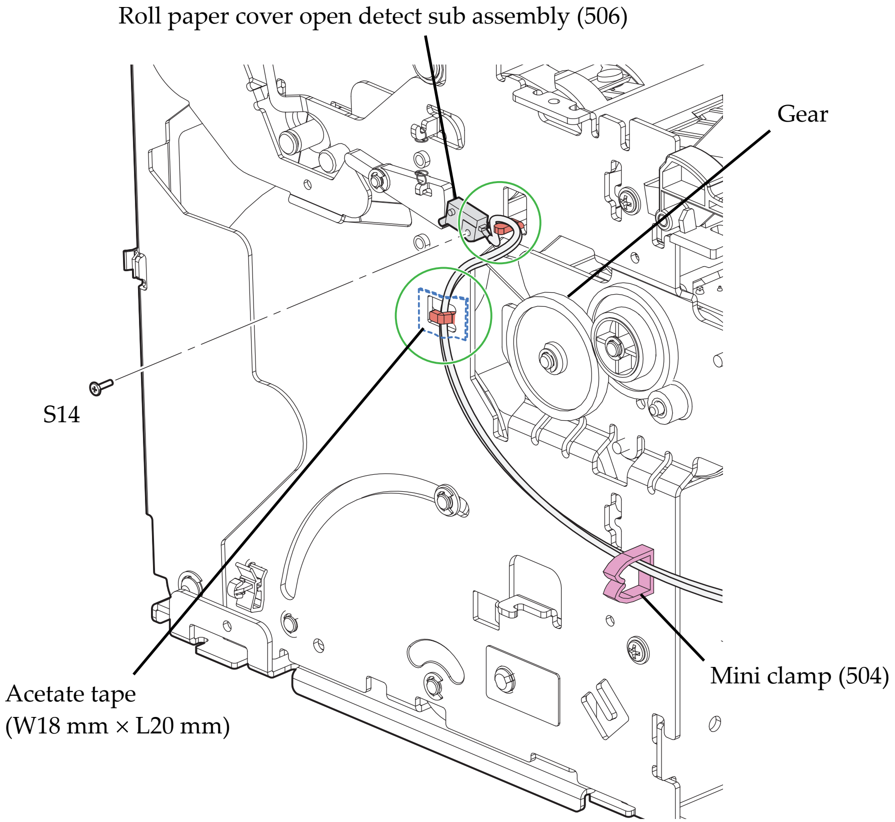


図 5-96. **Removing the roll paper cover open detect sub assembly (506)**

**Assembly**

☐ When installing the roll paper cover open detect sub assembly (506), route the lead wire while taking care not to let the lead wire touch the gear.

☐ When installing the roll paper cover open detect sub assembly (506), route the lead wire through the rib and the hook on the frame, then secure the lead wire by applying double-sided tape (W18 mm x L20 mm) on the rib.

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

☐ page 206, " Roll paper cover open detect sub assembly."

## *Paper Out Roller Assembly*

1. Remove the F/F cover (107). (Page 121)
2. Remove the rear case assembly (104). (Page 130)
3. Remove the right case (106). (Page 122)
4. Remove the upper case assembly (103). (Page 131)
5. Remove the circuit board cover (0006). (Page 132)
6. Remove the I/C cover holder assembly (144). (Page 133)
7. Remove the right frame (0038). (Page 177)
8. Remove the A/C case assembly (112). (Page 162)
9. Remove the cartridge holder unit (546). (Page 185)
10. Remove the pressure pump unit (551). (Page 184)
11. Remove the IS pump unit (518). (Page 189)
12. Remove the main circuit board unit (201). (Page 197)
13. Remove the AID circuit board assembly (556). (Page 136)
14. Remove the circuit board frame (0018). (Page 140)
15. Remove the left case (105) / M/B cover (142). (Page 123)
16. Remove the front paper guide assembly (111). (Page 124)
17. Remove the roll paper cover sub assembly (129). (Page 125)
18. Remove the lower case assembly (109). (Page 170)
19. Remove the right strengthen plate (0029). (Page 192)
20. Remove the E-ring, and remove the paper out gear (0030).

    A) E-RING,2.5 one piece (Ref.# E03)

21. Remove the two E-rings, and remove the following parts.
    - Paper out roller assembly (510)
    - Paper feeding roller bearing (502)
    - Leaf spring (503)
    - Plain washer (W02)

    B) E-RING,3 two pieces (Ref.# E04)

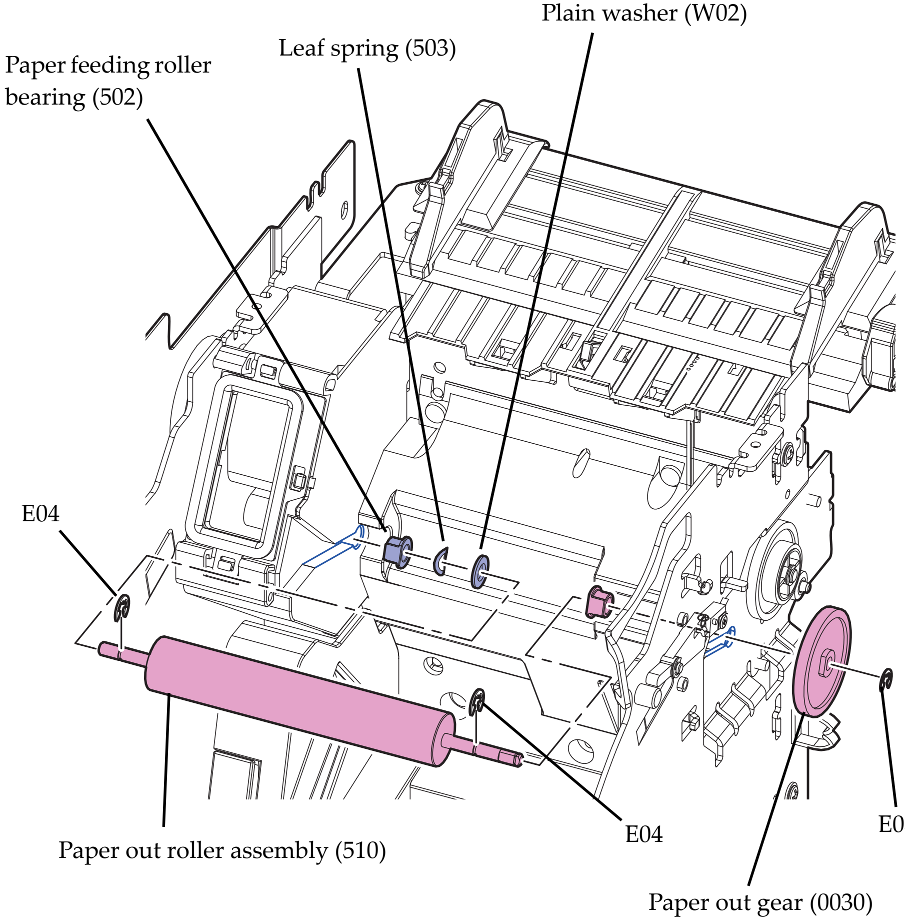

Plain washer (W02)
Leaf spring (503)
Paper feeding roller bearing (502)
E04
Paper out roller assembly (510)
E04
E03
Paper out gear (0030)

**Figure 5-97. Removing the paper out roller assembly (510)**

**Assembly**

When attaching the leaf spring (503), set it with the concave side facing the roller.

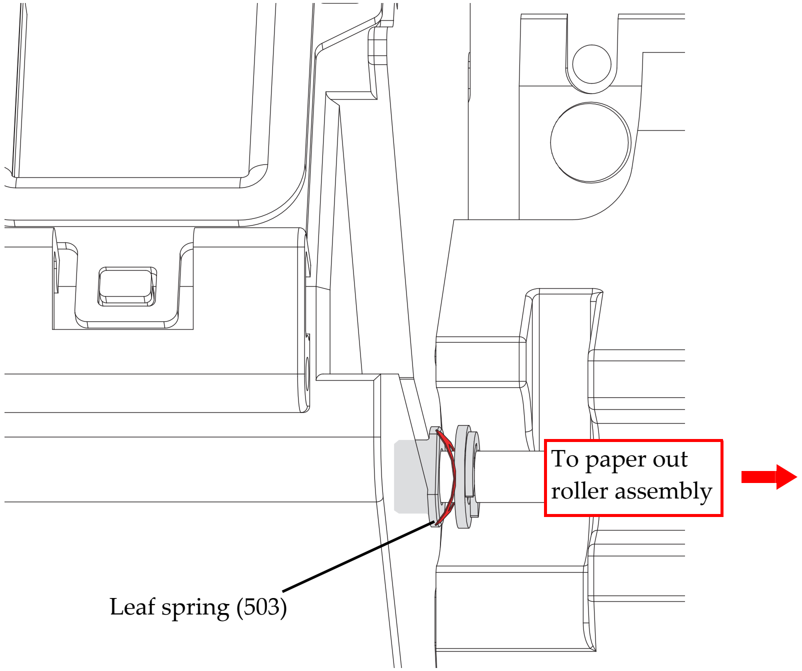

To paper out roller assembly
Leaf spring (503)

**Figure 5-98. Installing the paper out roller assembly (510)**

**Adjustment**

Adjustments must be carried out after any of the following part have been replaced.

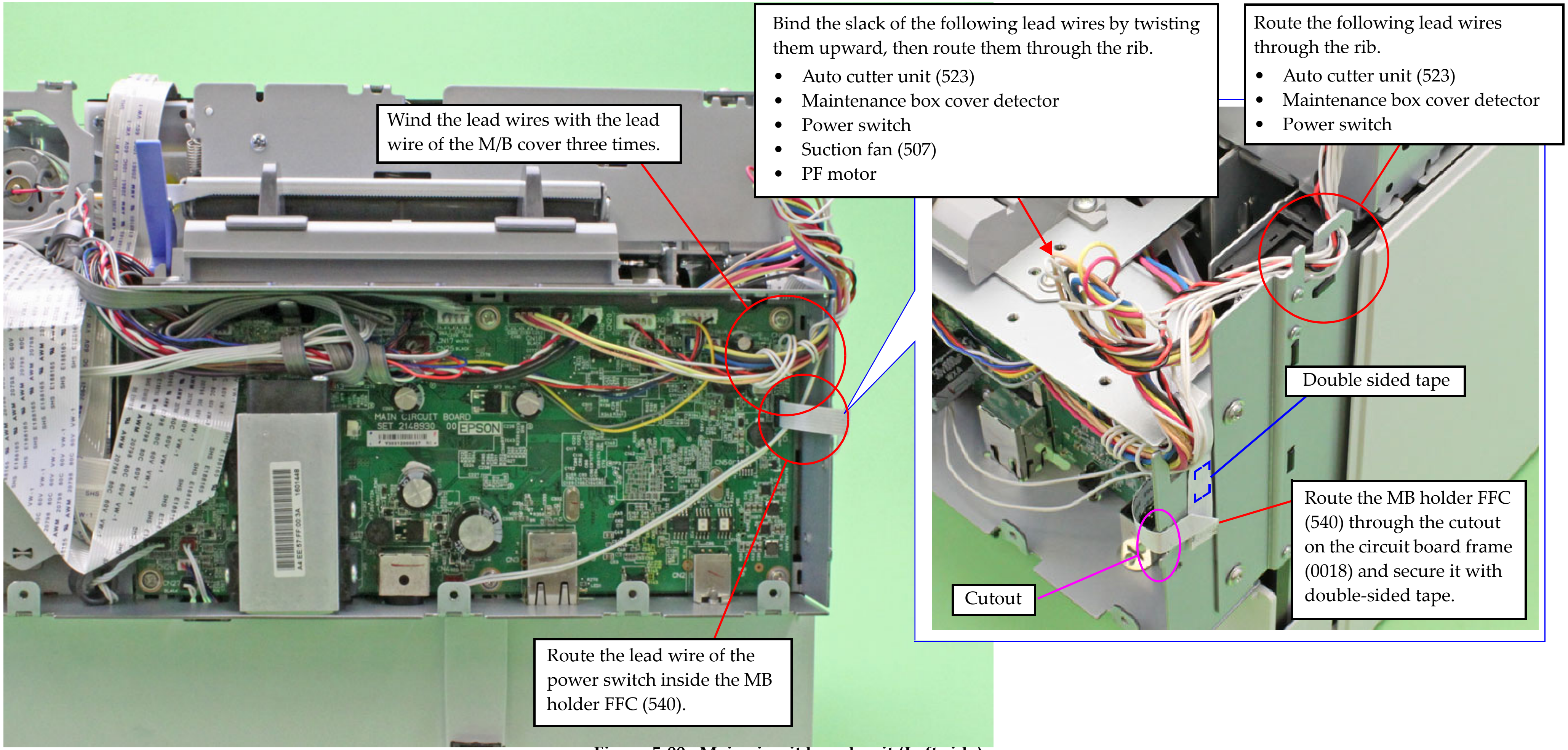
☐ page 206, " Paper out roller assembly."

## Routing the Cables

This section shows how to route the lead wires.

## Main Circuit Board Unit

- Left side


Wind the lead wires with the lead wire of the M/B cover three times.

Bind the slack of the following lead wires by twisting them upward, then route them through the rib.

- Auto cutter unit (523)
- Maintenance box cover detector
- Power switch
- Suction fan (507)
- PF motor

Route the following lead wires through the rib.

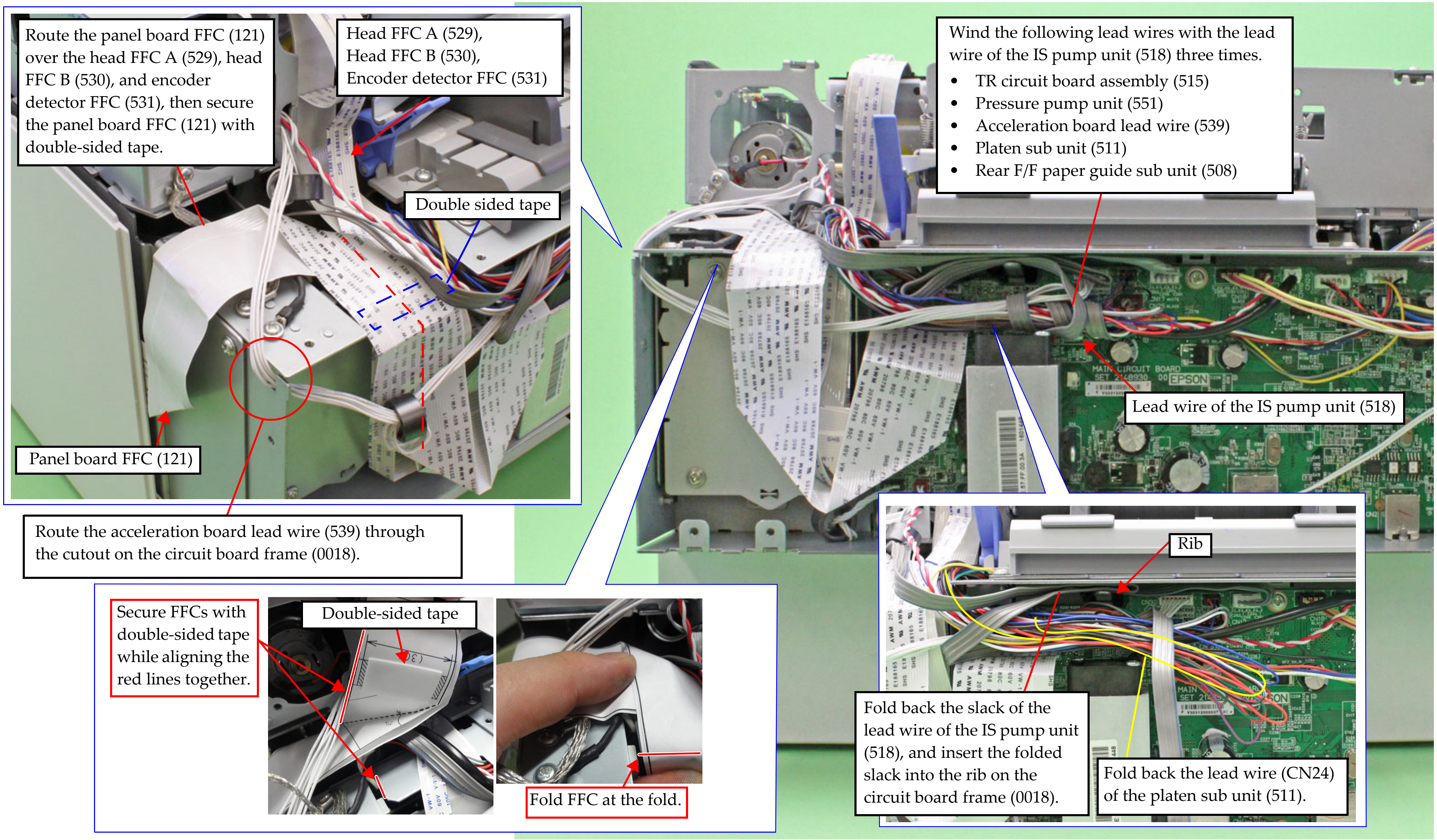
- Auto cutter unit (523)
- Maintenance box cover detector
- Power switch

Route the MB holder FFC (540) through the cutout on the circuit board frame (0018) and secure it with double-sided tape.

Route the lead wire of the power switch inside the MB holder FFC (540).

**Figure 5-99. Main circuit board unit (Left side)**

- Right side



Route the panel board FFC (121) over the head FFC A (529), head FFC B (530), and encoder detector FFC (531), then secure the panel board FFC (121) with double-sided tape.

Route the acceleration board lead wire (539) through the cutout on the circuit board frame (0018).

Secure FFCs with double-sided tape while aligning the red lines together.

Fold FFC at the fold.

Wind the following lead wires with the lead wire of the IS pump unit (518) three times.

- TR circuit board assembly (515)
- Pressure pump unit (551)
- Acceleration board lead wire (539)
- Platen sub unit (511)
- Rear F/F paper guide sub unit (508)

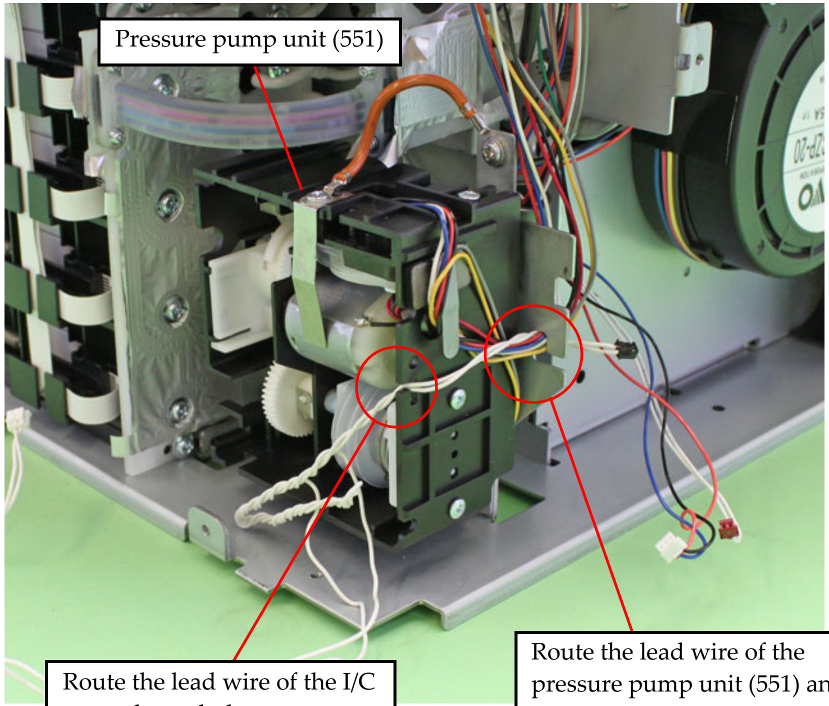
Fold back the slack of the lead wire of the IS pump unit (518), and insert the folded slack into the rib on the circuit board frame (0018).

Fold back the lead wire (CN24) of the platen sub unit (511).

Head FFC A (529),
Head FFC B (530),
Encoder detector FFC (531)
Double sided tape
Panel board FFC (121)
Double-sided tape
Lead wire of the IS pump unit (518)
Rib

Figure 5-100. Main circuit board unit (Right side)

## Pressure Pump Unit



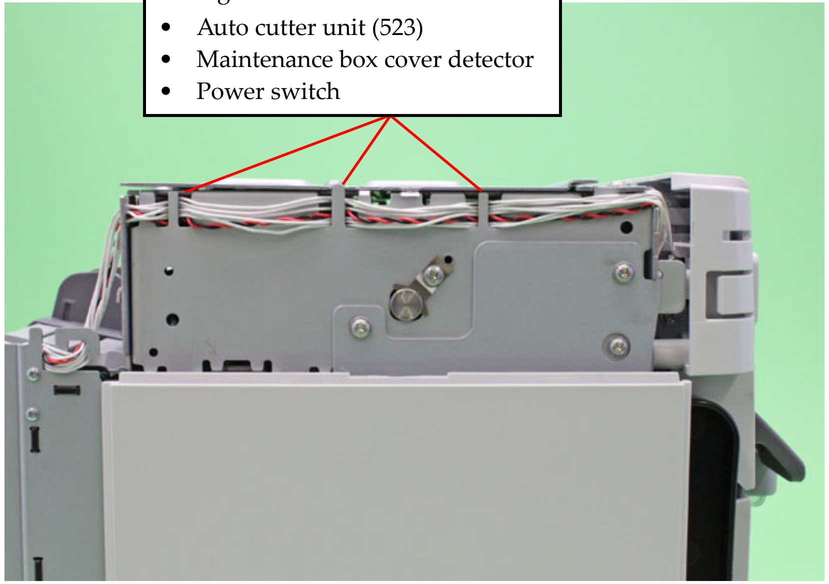
Pressure pump unit (551)

Route the lead wire of the I/C cover through the cutout on the pressure pump unit (551).

Route the lead wire of the pressure pump unit (551) and lead wire of the I/C cover through the cutout on the frame.

**Figure 5-101. Pressure pump unit**

## Left Side

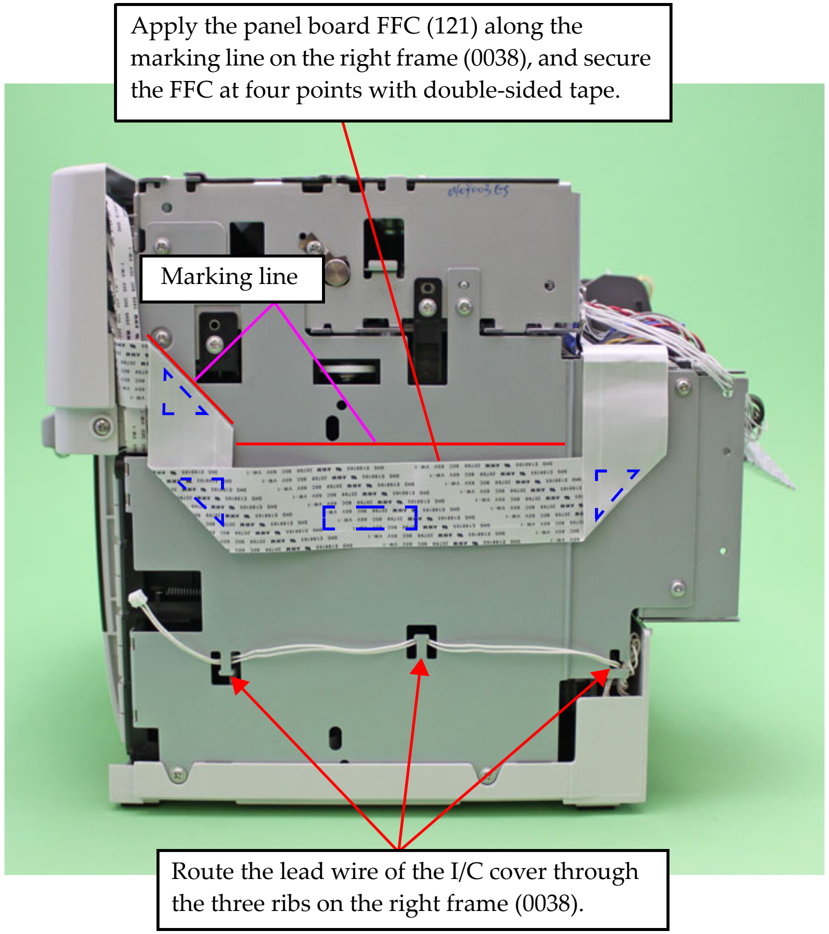


Route the following lead wires through the three ribs on the frame.

- Auto cutter unit (523)
- Maintenance box cover detector
- Power switch

**Figure 5-102. Left side**

## Right Side

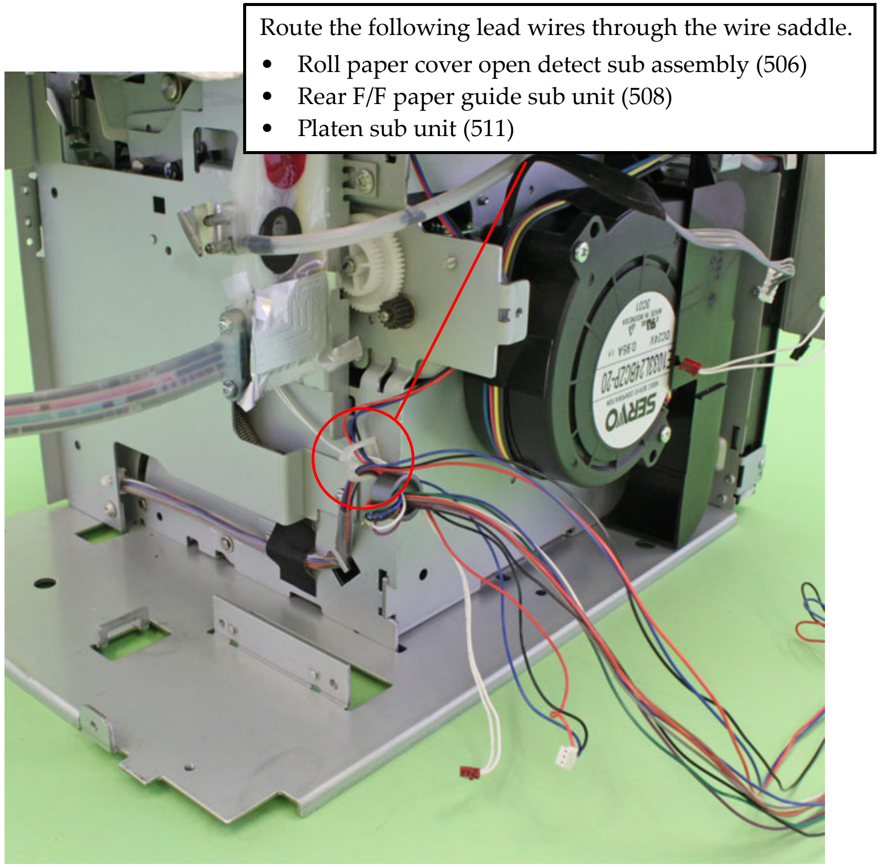


Apply the panel board FFC (121) along the marking line on the right frame (0038), and secure the FFC at four points with double-sided tape.

Route the lead wire of the I/C cover through the three ribs on the right frame (0038).

Figure 5-103. Right side

## Rear Side

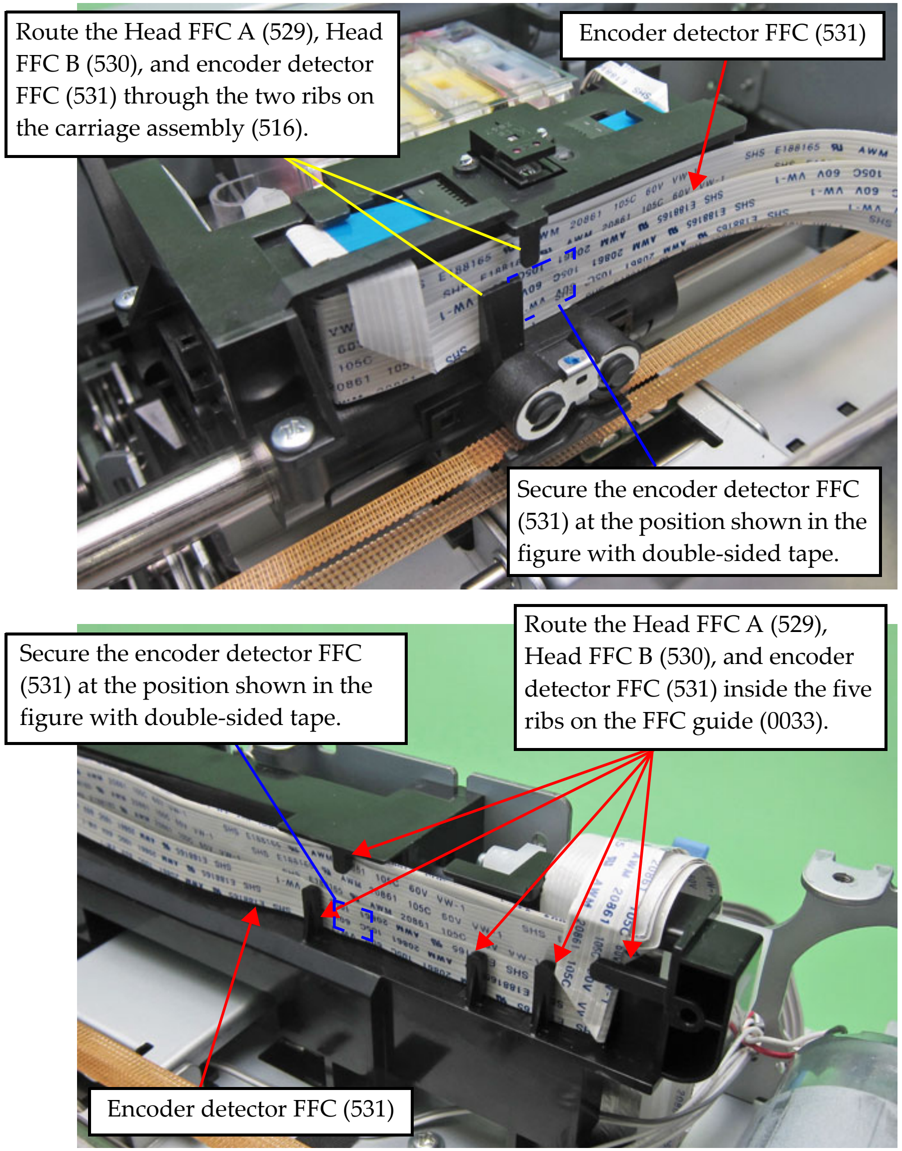


Route the following lead wires through the wire saddle.

- Roll paper cover open detect sub assembly (506)
- Rear F/F paper guide sub unit (508)
- Platen sub unit (511)

Figure 5-104. Rear side

## Routing the FFC



Route the Head FFC A (529), Head FFC B (530), and encoder detector FFC (531) through the two ribs on the carriage assembly (516).

Encoder detector FFC (531)

Secure the encoder detector FFC (531) at the position shown in the figure with double-sided tape.

Secure the encoder detector FFC (531) at the position shown in the figure with double-sided tape.

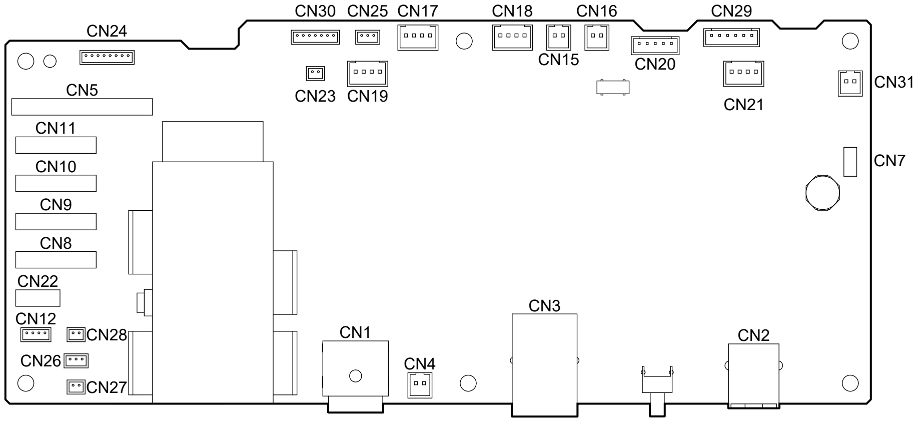
Route the Head FFC A (529), Head FFC B (530), and encoder detector FFC (531) inside the five ribs on the FFC guide (0033).

Encoder detector FFC (531)

**Figure 5-105. Routing the FFC**

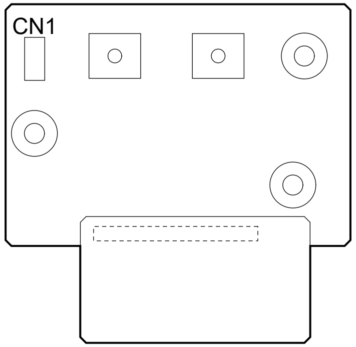
# *Connector Positions*

## *Main Circuit Board Unit*


CN30
CN25
CN17
CN18
CN16
CN29
CN24
CN15
CN20
CN5
CN23
CN19
CN21
CN31
CN11
CN10
CN9
CN8
CN7
CN22
CN12
CN28
CN26
CN27
CN3
CN1
CN2
CN4

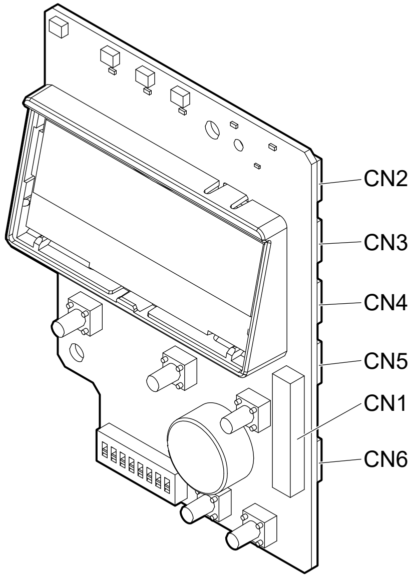
| Connector | Connected to | No. of pins | Color |
|---|---|---|---|
| CN1 | AC adapter (119) | 4 | --- |
| CN2 | USB cable (117) | 4 | --- |
| CN3 | LAN cable | 8 | --- |
| CN4 | Power switch | 2 | Red |
| CN5 | Panel circuit board assembly (120) | 32 | --- |
| CN7 | CSIC connector (550) | 7 | --- |
| CN8 | Head FFC A (529) | 17 | --- |
| CN9 | Head FFC A (529) | 17 | --- |
| CN10 | Head FFC B (530) | 17 | --- |
| CN11 | Head FFC B (530) | 17 | --- |
| CN12 | AID circuit board assembly (556) | 4 | Black |
| CN15 | CR motor assembly (517) | 4 | Black |
| CN16 | Pressure pump motor | 2 | White |
| CN17 | PF motor | 4 | White |
| CN19 | IS pump unit motor | 4 | Red |
| CN20 | Cutter motor | 5 | White |
| CN21 | Suction fan (507) | 4 | Blue |
| CN22 | Encoder board assembly (525) | 8 | --- |
| CN23 | TR circuit board assembly (515) | 2 | Blue |
| CN24 | Platen sub unit (511) | 8 | White |
| CN25 | Platen sub unit (511) | 3 | Black |
| CN26 | Rear F/F paper guide sub unit (508) | 3 | White |
| CN27 | I/C cover detector | 2 | Black |
| CN28 | Roll paper cover open detect sub assembly (506) | 2 | Red |
| CN29 | Pressure pump unit (551) | 6 | White |
| CN30 | Acceleration sensor board assembly (538) | 7 | White |
| CN31 | M/B cover detector | 2 | White |

## *AID Circuit Board*



| Connector | Connected to | No. of pins | Color |
|---|---|---|---|
| CN1 | Main circuit board unit (201) | 4 | Black |

## *Panel Board*



| Connector | Connected to | No. of pins | Color |
|---|---|---|---|
| CN1 | Main circuit board unit (201) | 25 | --- |
| CN2 | Cartridge holder unit (546) | 7 | --- |
| CN3 | Cartridge holder unit (546) | 7 | --- |
| CN4 | Cartridge holder unit (546) | 7 | --- |
| CN5 | Cartridge holder unit (546) | 7 | --- |
| CN6 | Main circuit board unit (201) | 6 | --- |

# CHAPTER

# 6

# ADJUSTMENT

This chapter describes the adjustment items and the procedures required after repairing or replacing certain parts of this product.

**Check**

- ☐ Always refer to page 207, " Required Adjustments by Part or Unit" and make sure to perform all adjustments listed in the table in the given order.
- ☐ If you need to avoid the auto cleaning by the AID mechanism during each adjustment, see page 39, " DIP Switch Settings" and set the DIP SW 4 to ON (Auto nozzle check disabled).

**CAUTION**

When performing an adjustment, always read and follow the precautions given in the corresponding section. Ignoring the precautions may result in malfunction of the unit.

## Adjustment Work flow

See page 206, " Parts and Units that Require Adjustments" to check if the part you repaired or replaced is listed. If the part is on the list, see page 207, " Required Adjustments by Part or Unit" and perform all the required adjustments in the specified order given in the table.

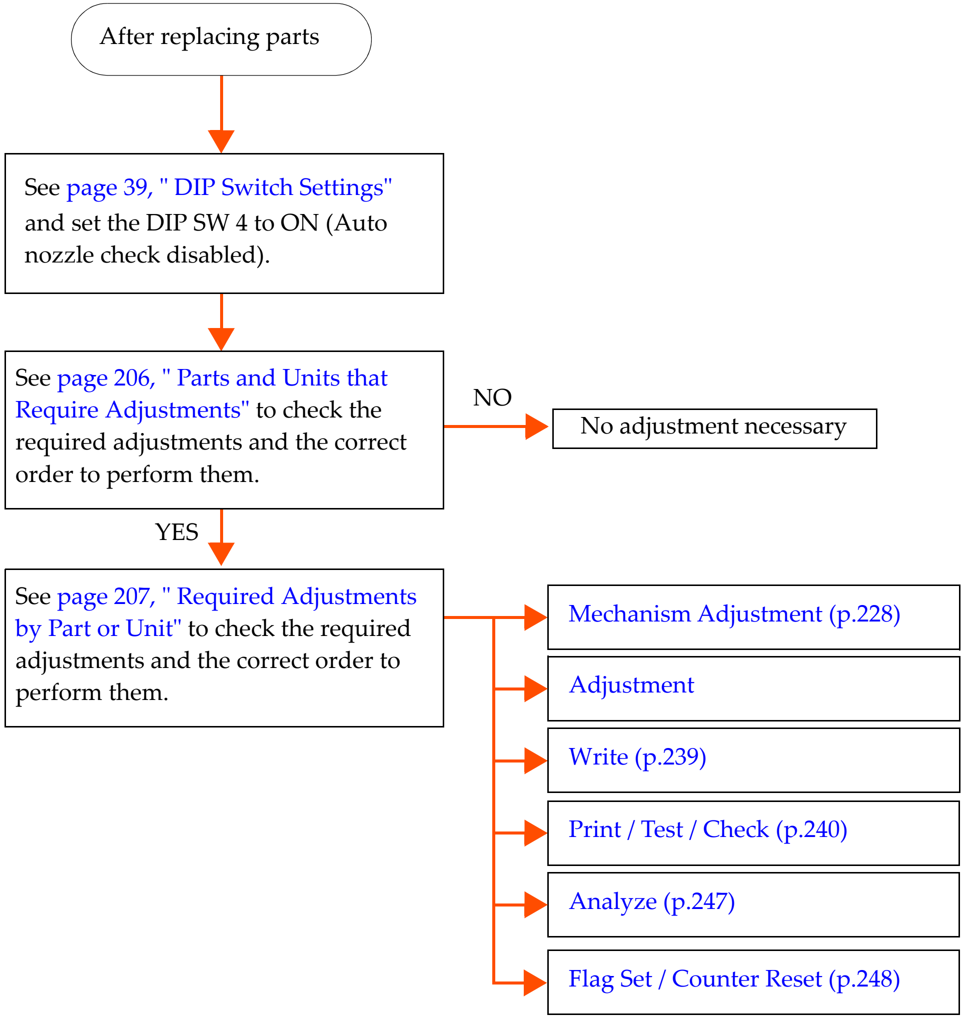

After replacing parts
See page 39, " DIP Switch Settings" and set the DIP SW 4 to ON (Auto nozzle check disabled).
See page 206, " Parts and Units that Require Adjustments" to check the required adjustments and the correct order to perform them.
NO
No adjustment necessary
YES
See page 207, " Required Adjustments by Part or Unit" to check the required adjustments and the correct order to perform them.
Mechanism Adjustment (p.228)
Adjustment
Write (p.239)
Print / Test / Check (p.240)
Analyze (p.247)
Flag Set / Counter Reset (p.248)

**Figure 6-1. Adjustment flow**

## Parts and Units that Require Adjustments

The following parts and units require adjustments after they are repaired or replaced.

| Category | Ref. No. | Part or unit name to be repaired | Disassembly/ reassembly reference page | Adjustment reference page |
|---|---|---|---|---|
| Exterior Parts | 103 | Upper case assembly | Page 131 | Page 207 |
| | 104 | Rear case assembly | Page 130 | Page 207 |
| | 105 | Left case | Page 123 | Page 207 |
| | 106 | Right case | Page 122 | Page 207 |
| | 107 | F/F cover | Page 121 | Page 207 |
| | 109 | Lower case assembly | Page 170 | Page 207 |
| | 111 | Front paper guide assembly | Page 124 | Page 207 |
| | 112 | A/C case assembly | Page 162 | Page 207 |
| | 113 | IC cover | Page 133 | Page 207 |
| | 129 | Roll paper cover sub assembly | Page 125 | Page 207 |
| | 142 | M/B cover | Page 123 | Page 207 |
| Electrical Circuit Board | 120 | Panel circuit board assembly | Page 166 | Page 207 |
| | 201 | Main circuit board unit (Available data dump) | Page 138 | Page 209 |
| | 201 | Main circuit board unit (Unavailable data dump) | Page 138 | Page 209 |
| | 515 | TR circuit board assembly | Page 160 | Page 212 |
| | 556 | AID circuit board assembly | Page 136 | Page 215 |
| Motor | 517 | CR motor assembly | Page 168 | Page 214 |
| Sensor | 506 | Roll paper cover open detect sub assembly | Page 194 | Page 208 |
| | 538 | Acceleration sensor board assembly | Page 159 | Page 207 |
| FFC | 121 | Panel board FFC | Page 166 | Page 207 |
| | 531 | Encoder detector FFC | Page 149 | Page 212 |
| Other | 130 | Carriage scale | Page 142 | Page 208 |
| | 131 | Scale fixed spring | Page 142 | Page 208 |
| | 501 | Valve head assembly | Page 149 | Page 210 |
| | 507 | Suction fan | Page 176 | Page 211 |
| | 508 | Rear F/F paper guide sub unit | Page 143 | Page 215 |
| | 510 | Paper out roller assembly | Page 195 | Page 215 |
| | 511 | Platen sub unit | Page 187 | Page 213 |
| | 513 | Paper feed shaft assembly | Page 127 | Page 211 |
| | 514 | Carriage shaft | Page 157 | Page 210 |
| | 516 | Carriage assembly | Page 157 | Page 213 |
| | 518 | IS pump unit | Page 189 | Page 208 |
| | 523 | Auto cutter unit | Page 165 | Page 208 |
| | 528 | Print head | Page 149 | Page 214 |
| | 534 | Fixed blade | Page 124 | Page 207 |
| | 541 | Roll paper guide film | Page 128 | Page 207 |
| | 546 | Cartridge holder unit | Page 185 | Page 207 |

# *Required Adjustments by Part or Unit*

The following tables list adjustments required after each part or unit is repaired or replaced. The adjustments are listed in the order of performing them.

**Check**

- ☐ If replacing with a new one, perform all adjustment for specified parts.
- ☐ The meaning of following abbreviation is shown below.
  *: RM = After replacing the part with a new one
  RP= After repairing the part (includes when it is just removed and reinstalled)

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 103 | Upper case | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| 104 | Rear case assembly | 2 | Roll Paper Print Test | Yes | Yes | Page 244 |
| 105 | Left case | 3 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| 106 | Right case | | | | | |
| 107 | F/F cover | | | | | |
| 109 | Lower case assembly | | | | | |
| 111 | Front paper guide assembly | | | | | |
| 112 | A/C case assembly | | | | | |
| 113 | IC cover | | | | | |
| 129 | Roll paper cover sub assembly | | | | | |
| 142 | M/B cover | | | | | |
| 144 | I/C cover holder assembly | | | | | |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 120 | Panel circuit board assembly | | | | | |
| 538 | Acceleration sensor board assembly | | | | | |
| 121 | Panel board FFC | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| 534 | Fixed blade | 2 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 3 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| 546 | Cartridge holder unit | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Initial Charging | Yes | Yes | --- |
| | | 3 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 4 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| | | 5 | Reset Waste Ink Holder Counter | --- | Yes | Page 252 |
| | | 6 | Reset Waste ink absorber counter | --- | Yes | Page 251 |
| 541 | Roll paper guide film | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 3 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 4 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 523 | Auto cutter unit | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | A/C Duration Test | Yes | Yes | --- |
| | | 3 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 4 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| | | 5 | Cutter movement counter reset | --- | Yes | Page 251 |
| 130 | Carriage scale | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| 131 | Scale fixed spring | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | Bi-d(VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 5 | CR Load Check | Yes | Yes | --- |
| | | 6 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 7 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 8 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 506 | Roll paper cover open detect sub assembly | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | AID output Level Check | Yes | Yes | --- |
| | | 3 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 4 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| 518 | IS pump unit | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | AID output Level Check | Yes | Yes | --- |
| | | 3 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 4 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 201 | Main circuit board unit (Available data dump) | 1 | EEPROM Backup | Yes | Yes | Page 248 |
| | | 2 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 3 | EEPROM Restore | --- | Yes | Page 248 |
| | | 4 | GAP/Roll Paper Margin Adjustment | --- | Yes | Page 230 |
| | | 5 | GAP voltage / Threshold Adjustment | --- | Yes | Page 235 |
| | | 6 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 7 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| | | 8 | DHCP ON | --- | Yes | --- |
| | | 9 | Network test | --- | Yes | --- |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 201 | Main circuit board unit (Unavailable data dump) | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Input Head ID | --- | Yes | Page 239 |
| | | 3 | Input Serial Number | --- | Yes | Page 239 |
| | | 4 | Input Market ID | --- | Yes | --- |
| | | 5 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 6 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 7 | PF Adjust | Yes | Yes | Page 232 |
| | | 8 | Bi-d(VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 9 | Fan Rotation Adjustment | --- | Yes | Page 234 |
| | | 10 | GAP voltage/ Threshold Adjustment | --- | Yes | Page 235 |
| | | 11 | AID output Level Check | Yes | Yes | --- |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 201 | Main circuit board unit (Unavailable data dump) | 12 | PW detector voltage Level Check | --- | Yes | --- |
| | | 13 | CR Load Check | --- | Yes | --- |
| | | 14 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 15 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 16 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| | | 17 | DHCP ON | --- | Yes | --- |
| | | 18 | Network test | --- | Yes | --- |
| 514 | Carriage shaft | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Aging of the carriage set | Yes | Yes | --- |
| | | 3 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 4 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 5 | Bi-d(VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | CR Load Check | Yes | Yes | --- |
| | | 7 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 8 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 9 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 501 | Valve head assembly | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Initial Charging | Yes | Yes | --- |
| | | 3 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 4 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 5 | Bi-d(VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 7 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 8 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 507 | Suction fan | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | Bi-d(VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 5 | Fan Rotation Adjustment | --- | Yes | Page 234 |
| | | 6 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 7 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 8 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 513 | Paper feed shaft assembly | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | PF Adjust | Yes | Yes | Page 232 |
| | | 5 | Bi-d (VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | BACK FEED PITCH Misalignment Adjustment | Yes | Yes | Page 238 |
| | | 7 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 8 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 9 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 515 | TR circuit board assembly | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | PF Adjust | Yes | Yes | Page 232 |
| | | 5 | Bi-d (VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | BACK FEED PITCH Misalignment Adjustment | Yes | Yes | Page 238 |
| | | 7 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 8 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 9 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 531 | Encoder detector FFC | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | PF Adjust | Yes | Yes | Page 232 |
| | | 5 | Bi-d (VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | CR Load Check | Yes | Yes | --- |
| | | 7 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 8 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 9 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 511 | Platen sub unit | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | PF Adjust | Yes | Yes | Page 232 |
| | | 5 | Bi-d (VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | GAP voltage/ Threshold Adjustment | Yes | Yes | Page 233 |
| | | 7 | BACK FEED PITCH Misalignment Adjustment | Yes | Yes | Page 238 |
| | | 8 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 9 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 10 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 516 | Carriage assembly | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Aging of the carriage set | Yes | Yes | --- |
| | | 3 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 4 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 5 | Bi-d (VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | Head Slant Check | Yes | Yes | Page 241 |
| | | 7 | AID output Level Check | Yes | Yes | --- |
| | | 8 | CR Load Check | --- | Yes | --- |
| | | 9 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 10 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 11 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 528 | Print head | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Input Head ID | Yes | Yes | Page 239 |
| | | 3 | Initial Charging | Yes | Yes | --- |
| | | 4 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 5 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 6 | PF Adjust | Yes | Yes | Page 232 |
| | | 7 | Bi-d (VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 8 | Head Slant Check | Yes | Yes | Page 241 |
| | | 9 | AID output Level Check | Yes | Yes | --- |
| | | 10 | CR Load Check | Yes | Yes | --- |
| | | 11 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 12 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 13 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| | | 14 | Reset AID Irreparable Nozzle Number | --- | Yes | Page 251 |
| | | 15 | Reset AID Irreparable Nozzle Data | --- | Yes | Page 252 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 517 | CR motor assembly | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | PF Adjust | Yes | Yes | Page 232 |
| | | 5 | Bi-d (VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | CR Load Check | Yes | Yes | Page 229 |
| | | 7 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 8 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 9 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 508 | Rear F/F paper guide sub unit | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | PF Adjust | Yes | Yes | Page 232 |
| | | 5 | Bi-d (VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | BACK FEED PITCH Misalignment Adjustment | Yes | Yes | Page 238 |
| | | 7 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 8 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 9 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 510 | Paper out roller assembly | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 3 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 4 | PF Adjust | Yes | Yes | Page 232 |
| | | 5 | Bi-d(VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | AID output Level Check | Yes | Yes | --- |
| | | 7 | BACK FEED PITCH Misalignment Adjustment | Yes | Yes | Page 238 |
| | | 8 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 9 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 10 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| 556 | AID circuit board assembly | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | AID output Level Check | Yes | Yes | --- |
| | | 3 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 4 | Fanfold Paper Print Test | Yes | Yes | Page 243 |

| Ref. No. | Part name/unit | Required adjustment | | RM* | RP* | Reference |
|---|---|---|---|---|---|---|
| 551 | Pressure pump unit | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 3 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| | | 4 | Reset Pressure Pump Counter CW | --- | Yes | Page 252 |
| | | 5 | Reset Pressure Pump Counter CCW | --- | Yes | Page 252 |
| | | 6 | Reset Pressure Pump Counter | --- | Yes | Page 252 |
| 524 | Supply duct unit | 1 | Parts replacement / Parts attachment | Yes | Yes | --- |
| | | 2 | Initial Charging | Yes | Yes | --- |
| | | 3 | Bi-d(VSD1)/AC Adjustment | Yes | Yes | Page 229 |
| | | 4 | GAP/Roll Paper Margin Adjustment | Yes | Yes | Page 230 |
| | | 5 | Bi-d(VSD4) Adjustment | Yes | Yes | Page 233 |
| | | 6 | Roll Paper Print Test | Yes | Yes | Page 244 |
| | | 7 | BM/Fanfold Paper Margin Adjustment | Yes | Yes | Page 231 |
| | | 8 | Fanfold Paper Print Test | Yes | Yes | Page 243 |
| | | 9 | Reset Tube Maintenance Counter | --- | Yes | Page 251 |

# *Description of Adjustments*

The following tables describe the general outline of the adjustments.

Check

The meaning of following abbreviations are shown below.
*1: AU = Adjustment Program, *2: AT = Jig or Tool for the adjustment

☐ Mechanical adjustment

| **Adjustment** | **Overview** | **AU[*1]** | **AT[*2]** | **Page** |
|---|---|---|---|---|
| Gap adjustment<br>(Between the Roller Set and the Platen) | Adjusts the gap between the Roller Set and the Platen. | No | Yes | Page 228 |

☐ Diagnostics/Analyze

| **Adjustment** | **Overview** | **AU[*1]** | **AT[*2]** | **Page** |
|---|---|---|---|---|
| Printer information | Displays the printer setting information. | Yes | No | Page 247 |
| Get Counter Information | Acquires and displays the counter values in the EEPROM. | Yes | No | Page 249 |
| Check Ink Level | Acquires and displays the ink level in the CSIC. | Yes | No | Page 253 |
| Get Fatal Error Information | Acquires and displays the fatal error information in the EEPROM when a fatal error occurs. | Yes | No | Page 252 |
| Read EEPROM | Read the EEPROM data. | Yes | No | --- |
| Write EEPROM | Write the EEPROM data. | Yes | No | --- |
| Nozzle Check Pattern | Prints the nozzle check pattern. | Yes | No | Page 240 |
| Head Cleaning | Executes cleaning of the head nozzles. | Yes | No | Page 247 |
| BM/Gap Voltage | Displays the voltage of BM, GAP. | Yes | No | --- |

☐ Repair

| Adjustment | Overview | AU[*1] | AT[*2] | Page |
|---|---|---|---|---|
| EEPROM Backup | Backup all data from EEPROM on failed Main Circuit Board. | Yes | No | Page 248 |
| EEPROM Restore | Restores the backup copy data to replaced Main Circuit Board. | Yes | No | Page 248 |
| Cap Release/Lock | Releases and locks the cap. | Yes | No | --- |
| Ink Discharge | Removes ink in the ink path using the maintenance cartridge. | Yes | No | --- |
| Reset Cutter movement Counter | Resets the number of times of the auto-cutter movement. | Yes | No | Page 251 |
| Reset waste ink absorber counter | Resets the counter of the waste ink absorber counter. | Yes | No | Page 251 |
| Reset Tube Maintenance Counter | Resets the counter of the tube maintenance counter. | Yes | No | Page 251 |
| Reset Head failure error | Resets the fatal error (73H: Head failure error). | Yes | No | --- |
| Reset AID Irreparable Nozzle Number | Resets the counter of unrepairable nozzles detected by AID. | Yes | No | Page 251 |
| Reset AID Retry Wiping Counter | Resets the wiping counter retried by AID. | Yes | No | Page 251 |
| Reset AID Irreparable Nozzle Data | Resets the data of unrepairable nozzles detected by AID. | Yes | No | Page 252 |
| Reset Pressure Pump Counter CW | Resets the time while the pressure pump motor rotates clockwise. | Yes | No | Page 252 |
| Reset Pressure Pump Counter CCW | Resets the time while the pressure pump motor rotates counterclockwise. | Yes | No | Page 252 |
| Reset Pressure Pump Counter Counter | Resets the total rotation time of the pressure pump motor. | Yes | No | Page 252 |
| Reset Waste Ink Holder Counter | Resets the life counter of the waste ink pad of the cartridge holder unit (546). | Yes | No | Page 252 |

☐ Adjustment

| Adjustment | Overview | AU[*1] | AT[*2] | Page |
|---|---|---|---|---|
| Bi-d(VSD1)/AC Adjustment | Adjusts the timing of firing ink drops and the auto cut position in bi-directional printing. | Yes | No | Page 229 |
| GAP/Roll Paper Margin Adjustment | Adjusts the position of the label detector and the roll paper width. | Yes | No | Page 230 |
| PF Adjust | Adjusts paper feed. | Yes | No | Page 232 |
| Bi-d (VSD4) Adjustment | Executes the Bi-d (VSD4) adjustment. | Yes | No | Page 233 |
| Head Slant Check | Adjusts the head slant. | Yes | No | Page 241 |
| Fan Rotation Adjustment | Adjusts the variability of fan rotation for each printer. | Yes | No | Page 234 |

| Adjustment | Overview | AU[*1] | AT[*2] | Page |
|---|---|---|---|---|
| GAP voltage/Threshold Adjustment | Adjusts the variable resistance of the label detector into an appropriate range. | Yes | No | Page 235 |
| AID output Level Check | Checks the maximum/minimum voltage level during firing/not firing of ink, and inputs the necessary data to the EEPROM. | Yes | No | Page 236 |
| PW detector voltage Level Check | Checks the level of PW detector voltage. | Yes | No | --- |
| CR Load Check | Optimizes the mechanical load of the carriage motor. | Yes | No | --- |
| BACK FEED PITCH Misalignment Adjustment | Adjusts the slant of the printing for roll paper. | Yes | No | Page 238 |
| BM/Fanfold Paper Margin Adjustment | Adjusts the BM position and the margin of the Fanfold paper. | Yes | No | Page 231 |

☐ Check result

| Adjustment | Overview | AU[*1] | AT[*2] | Page |
|---|---|---|---|---|
| Roll Paper Print Test | Prints the check pattern for each adjustment for final print check on roll paper. | Yes | No | Page 244 |
| Print printer settings | Prints the settings of the printer. | Yes | No | Page 246 |
| Network test | Checks the communication of the printer and the computer.<br>Before executing this test, connect the LAN cable and enter the same IP address up to the third segment to the computer and the printer. | Yes | No | --- |
| A/C duration test | Executes an A/C duration test. | Yes | No | Page 246 |
| Aging of the carriage set | Stabilizes the sliding load between the carriage set and the frame. | Yes | No | --- |
| Fanfold Paper Print Test | Prints the check pattern for each adjustment for final print check on fanfold paper. | Yes | No | Page 243 |

☐ Setting

| Adjustment | Overview | AU[*1] | AT[*2] | Page |
|---|---|---|---|---|
| Input Head ID | Inputs head ID to the EEPROM. | Yes | No | Page 239 |
| Input Serial Number | Inputs serial number to the EEPROM. | Yes | No | Page 239 |
| Input Market ID | Inputs market ID to the EEPROM. | Yes | No | --- |
| Input Factory Setting | Inputs the factory setting. | Yes | No | --- |

| Adjustment | Overview | AU[*1] | AT[*2] | Page |
|---|---|---|---|---|
| Initial Charging Flag ON/OFF | Sets and turns off the flag for the initial ink charge. | Yes | No | Page 247 |
| Paper Setting Mode | Changes the paper setting mode. | Yes | No | --- |
| Paper Route Setting | Sets the paper route. | Yes | No | --- |
| AID Mode Change | Changes the AID mode. | Yes | No | Page 236 |
| Initial Charging | Executes initial charging. | Yes | No | --- |
| Ink Discharge | Executes the ink discharge. | Yes | No | --- |
| Firmware Update | Updates the firmware. | Yes | No | Page 253 |
| DHCP ON | Set the DHCP of the printer to ON. | Yes | No | --- |
| DHCP OFF | Set the DHCP of the printer to OFF. | Yes | No | --- |
| Enables AID OT limitation setting | Cancel the AID operating temperature limitation. | - | - | --- |
| Disables AID OT limitation setting | Set the AID operating temperature limitation.<br>* Set No Missing Dot Detection Mode at out of guarantied temperature of printer operation. | - | - | --- |
| Displays AID OT limitation setting | This is used to confirm the AID operating temperature limitation setting state. | - | - | --- |

## Tools for Adjustments

For information on the tools required for adjusting the TM-C3500 Series, page 268, " Appendix B Tools".

# Basic Operation of the Adjustment Program

This section describes the basic operation of the Adjustment Program.

## Operating Environment

| | |
|---|---|
| OS | ☐ Windows XP (32 bit)<br>☐ Windows 7 (32 bit/64 bit) |

## Installation

1. After extraction the zip-file, double-click the “TM-C3500_install.bat” to install the adjustment program. Then “msi” files in “install” folder will be installed automatically.

Note: The installation will be executed with discrimination between 32bit and 64bit automatically.

2. When the installation is finished, the desktop shortcut icon as “Epson Adjustment Program for PS” and “QPIT-DHCP” are created automatically.
3. Double-click the “Epson Adjustment Program for PS” icon to start the Adjustment program.

CAUTION

☐ This adjustment program includes the program of the “QPIT-DHCP”.
When the “QPIT-DHCP” is installed, the IP address of PC is changed.
In case of restoring the original IP address after the repair, please note the IP address in advance.

☐ When the PC connects to the backbone network with “QPIT-DHCP” working state, the network failure may occur.
Before the PC is connected to the backbone network, the uninstallation of the "QPIT-DHCP" should be executed and the network settings of PC should be restored.

## Basic operating procedure

☐ Mode

■ Sequential mode

The basic adjustment mode is the “Sequential”.
The newly-installed adjustment program is run in the sequential mode.
Click the “EXECUTE” button then the parts selection window is displayed.
Select the replacement parts and click the “OK” button then necessary adjustments are displayed in order.
Execute the displayed adjustments in order.

■ Particular mode

Can select the “Particular” mode with click the “SETTING” menu.
Click the “Particular” button of “Mode” and click the “OK” button.
When execute the adjustment in a different order indicated by the sequential mode, there is a possibility that the necessary adjustment for the repaired printer is unexecuted correctly.
Use the sequential mode by ordinary.
Can select the following adjustment category with selection in “Process” menu in the particular mode.

1. *Diagnostics/Analyze*
2. *Repair*
3. *Adjustment*
4. *Check result*
5. *Setting*

Select the category and click “EXECUTE” button. Then the adjustment items are displayed.

☐ “?” button

Can display the detailed operation procedure with click the “?” button in upper right corner.
There are operation procedures and cautions in each category. Please read the operation procedures before executing the adjustment.

☐ “Return” button

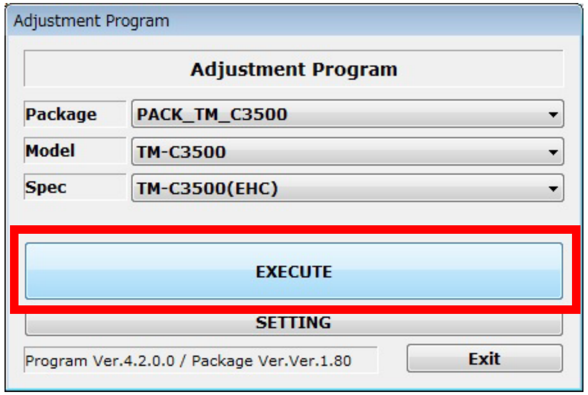
Can return the main menu with click the “Return” button in the bottom-right corner.

☐ How to close the error message

Can close the error message diagram with click of the “x” button in upper right or press the alternate key plus “E” key.

## *Sequential mode*

1. Select the “Sequential” mode with click the “SETTING” menu.
2. Click the “EXECUTE” button.



Adjustment Program

**Adjustment Program**

**Package** PACK_TM_C3500

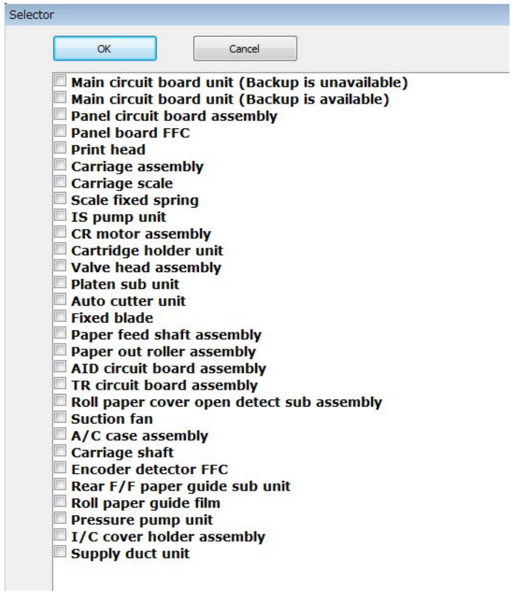
**Model** TM-C3500

**Spec** TM-C3500(EHC)

Program Ver.4.2.0.0 / Package Ver.Ver.1.80

**Figure 6-2. Top screen**

3. Select the replacement parts and click the “OK” button.

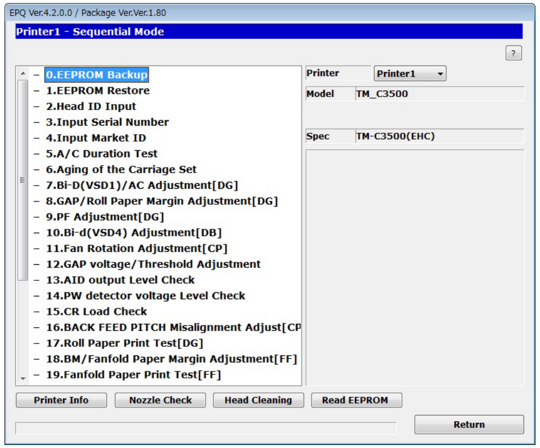


Selector

- ☐ Main circuit board unit (Backup is unavailable)
- ☐ Main circuit board unit (Backup is available)
- ☐ Panel circuit board assembly
- ☐ Panel board FFC
- ☐ Print head
- ☐ Carriage assembly
- ☐ Carriage scale
- ☐ Scale fixed spring
- ☐ IS pump unit
- ☐ CR motor assembly
- ☐ Cartridge holder unit
- ☐ Valve head assembly
- ☐ Platen sub unit
- ☐ Auto cutter unit
- ☐ Fixed blade
- ☐ Paper feed shaft assembly
- ☐ Paper out roller assembly
- ☐ AID circuit board assembly
- ☐ TR circuit board assembly
- ☐ Roll paper cover open detect sub assembly
- ☐ Suction fan
- ☐ A/C case assembly
- ☐ Carriage shaft
- ☐ Encoder detector FFC
- ☐ Rear F/F paper guide sub unit
- ☐ Roll paper guide film
- ☐ Pressure pump unit
- ☐ I/C cover holder assembly
- ☐ Supply duct unit

**Figure 6-3. Parts selecting screen**

4. Necessary adjustments are displayed in order.
   Execute the displayed adjustments in order



EPQ Ver.4.2.0.0 / Package Ver.Ver.1.80

Printer1 - Sequential Mode

- 0.EEPROM Backup
- 1.EEPROM Restore
- 2.Head ID Input
- 3.Input Serial Number
- 4.Input Market ID
- 5.A/C Duration Test
- 6.Aging of the Carriage Set
- 7.Bi-D(VSD1)/AC Adjustment[DG]
- 8.GAP/Roll Paper Margin Adjustment[DG]
- 9.PF Adjustment[DG]
- 10.Bi-d(VSD4) Adjustment[DB]
- 11.Fan Rotation Adjustment[CP]
- 12.GAP voltage/Threshold Adjustment
- 13.AID output Level Check
- 14.PW detector voltage Level Check
- 15.CR Load Check
- 16.BACK FEED PITCH Misalignment Adjust[CP
- 17.Roll Paper Print Test[DG]
- 18.BM/Fanfold Paper Margin Adjustment[FF]
- 19.Fanfold Paper Print Test[FF]

**Printer** Printer1

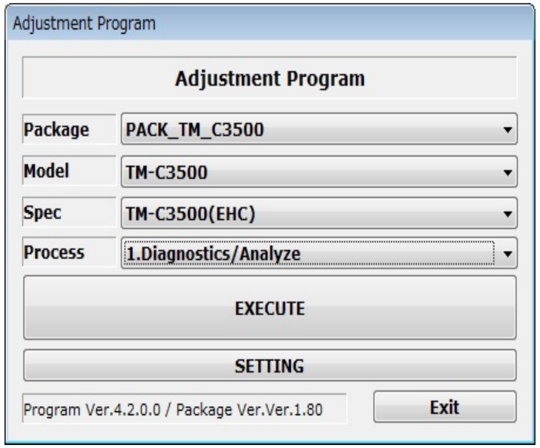
**Model** TM_C3500

**Spec** TM-C3500(EHC)

**Figure 6-4. Adjustment items screen**

## *Particular mode*

1. Select the "Particular" mode with click the "SETTING" menu.
2. Click the "EXECUTE" button.



Adjustment Program

Package: PACK_TM_C3500

Model: TM-C3500

Spec: TM-C3500(EHC)

Process: 1.Diagnostics/Analyze

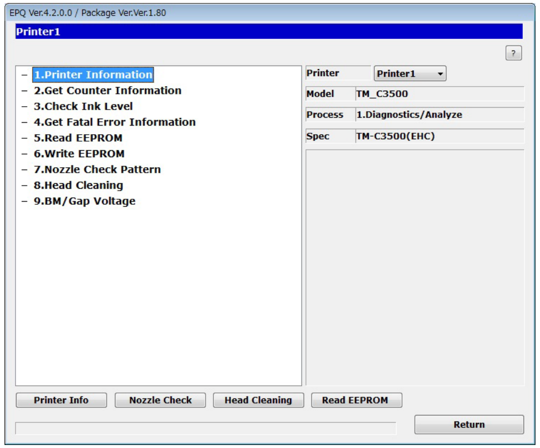
Program Ver.4.2.0.0 / Package Ver.Ver.1.80

Adjustment Program
EXECUTE
SETTING
Exit

**Figure 6-5. Top screen**

3. You can select from five categories in "Process" on the TOP screen. Select the menu item you want to display, then click [EXECUTE].

☐ Diagnostics/Analyze



EPQ Ver.4.2.0.0 / Package Ver.Ver.1.80

Printer1

Printer: Printer1

Model: TM_C3500

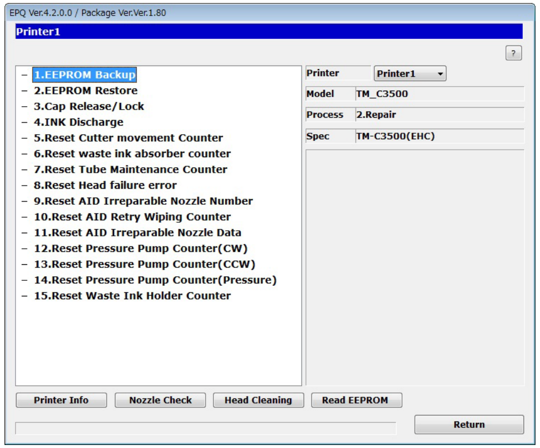
Process: 1.Diagnostics/Analyze

Spec: TM-C3500(EHC)

?
1.Printer Information
2.Get Counter Information
3.Check Ink Level
4.Get Fatal Error Information
5.Read EEPROM
6.Write EEPROM
7.Nozzle Check Pattern
8.Head Cleaning
9.BM/Gap Voltage
Printer Info
Nozzle Check
Head Cleaning
Read EEPROM
Return

**Figure 6-6. Diagnostics/Analyze menu**

☐ Repair



EPQ Ver.4.2.0.0 / Package Ver.Ver.1.80

Printer1

Printer: Printer1

Model: TM_C3500

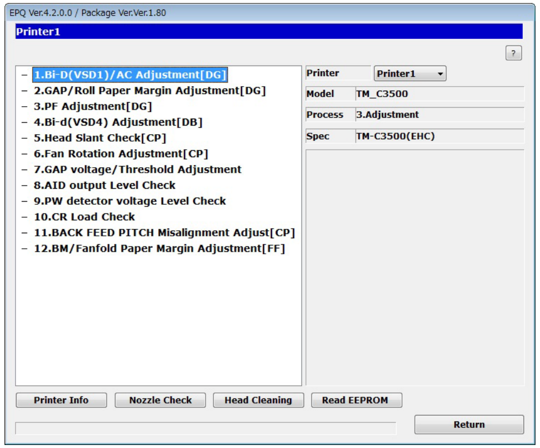
Process: 2.Repair

Spec: TM-C3500(EHC)

?
1.EEPROM Backup
2.EEPROM Restore
3.Cap Release/Lock
4.INK Discharge
5.Reset Cutter movement Counter
6.Reset waste ink absorber counter
7.Reset Tube Maintenance Counter
8.Reset Head failure error
9.Reset AID Irreparable Nozzle Number
10.Reset AID Retry Wiping Counter
11.Reset AID Irreparable Nozzle Data
12.Reset Pressure Pump Counter(CW)
13.Reset Pressure Pump Counter(CCW)
14.Reset Pressure Pump Counter(Pressure)
15.Reset Waste Ink Holder Counter
Printer Info
Nozzle Check
Head Cleaning
Read EEPROM
Return

**Figure 6-7. Repair menu**

☐ Adjustment



EPQ Ver.4.2.0.0 / Package Ver.Ver.1.80

Printer1

Printer: Printer1

Model: TM_C3500

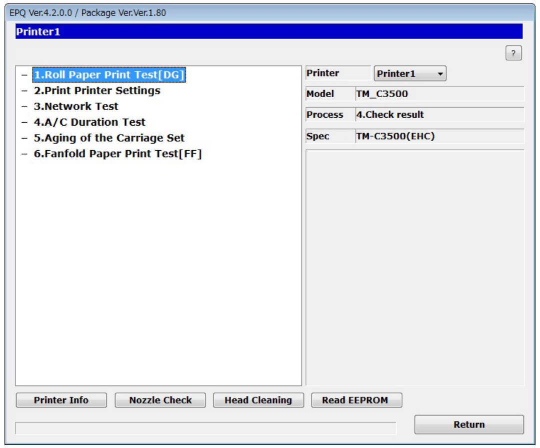
Process: 3.Adjustment

Spec: TM-C3500(EHC)

?
1.Bi-D(VSD1)/AC Adjustment[DG]
2.GAP/Roll Paper Margin Adjustment[DG]
3.PF Adjustment[DG]
4.Bi-d(VSD4) Adjustment[DB]
5.Head Slant Check[CP]
6.Fan Rotation Adjustment[CP]
7.GAP voltage/Threshold Adjustment
8.AID output Level Check
9.PW detector voltage Level Check
10.CR Load Check
11.BACK FEED PITCH Misalignment Adjust[CP]
12.BM/Fanfold Paper Margin Adjustment[FF]
Printer Info
Nozzle Check
Head Cleaning
Read EEPROM
Return

**Figure 6-8. Adjustment menu**

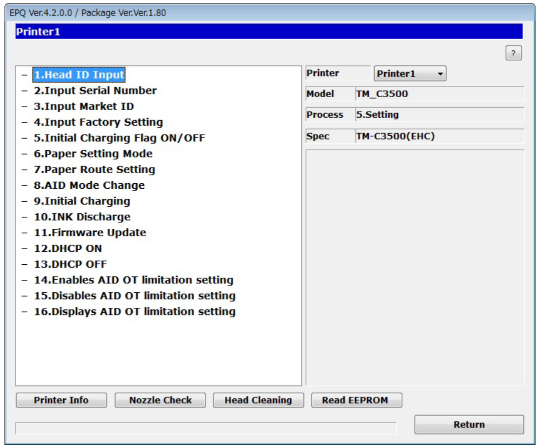
☐ Check result


EPQ Ver.4.2.0.0 / Package Ver.Ver.1.80
Printer1
?
1.Roll Paper Print Test[DG]
2.Print Printer Settings
3.Network Test
4.A/C Duration Test
5.Aging of the Carriage Set
6.Fanfold Paper Print Test[FF]
Printer Info
Nozzle Check
Head Cleaning
Read EEPROM
Return

Printer: Printer1
Model: TM_C3500
Process: 4.Check result
Spec: TM-C3500(EHC)

**Figure 6-9.** Check result menu

☐ Setting


EPQ Ver.4.2.0.0 / Package Ver.Ver.1.80
Printer1
?
1.Head ID Input
2.Input Serial Number
3.Input Market ID
4.Input Factory Setting
5.Initial Charging Flag ON/OFF
6.Paper Setting Mode
7.Paper Route Setting
8.AID Mode Change
9.Initial Charging
10.INK Discharge
11.Firmware Update
12.DHCP ON
13.DHCP OFF
14.Enables AID OT limitation setting
15.Disables AID OT limitation setting
16.Displays AID OT limitation setting
Printer Info
Nozzle Check
Head Cleaning
Read EEPROM
Return

Printer: Printer1
Model: TM_C3500
Process: 5.Setting
Spec: TM-C3500(EHC)

**Figure 6-10. Setting menu**

## Error Code List

If an error occurs during an adjustment of the Adjustment Program, an error code is displayed. See the following table and check the details of the error.

| Menu | Adjustment Item | Error code | Description |
|---|---|---|---|
| Repair | INK Discharge | 1 | Discharge result judgment screen Abort |
| | | 2 | Factory default setting result screen Abort |
| Adjustment | Bi-d(VSD1)/AC Adjustment | 1 | Paper Setting failed |
| | | 2 | Initialization of adjustment value failed |
| | | 3 | Writing the adjustment value failed or adjustment pattern printing error |
| | GAP/Roll Paper Margin Adjustment | 1 | Paper Setting failed |
| | | 2 | Initialization of adjustment value failed |
| | | 3 | Writing the adjustment value failed or adjustment pattern printing error |
| | PF Adjust | 1 | Paper Setting failed |
| | | 2 | Initialization of adjustment value failed |
| | | 3 | Writing the adjustment value failed or adjustment pattern printing error |
| Adjustment | Bi-d (VSD4) Adjustment | 1 | Paper Setting failed |
| | | 2 | Initialization of adjustment value failed |
| | | 3 | Writing the adjustment value failed or adjustment pattern printing error |
| | Head Slant Check | 1 | Adjustment pattern printing error |
| | | 2 | CR-to-Head Slant Check position transfer error |
| | | 3 | CR-to-Home position transfer error (1) |
| | | 4 | CR-to-Home position transfer error (2) |
| | Fan Rotation Adjustment | 1 | Paper Setting failed |
| | GAP voltage/Threshold Adjustment | 1 | Gap adjustment failed |
| | | 2 | Gap adjustment threshold error |
| | | 3 | Gap adjustment threshold writing error |

| Menu | Adjustment Item | Error code | Description |
|---|---|---|---|
| Adjustment | CR Load Check | 1 | Abnormality of Smap's Nip release or measurement correction value setting error |
| | | 2 | Measurement operation error |
| | | 3 | Obtained value calculation error |
| | | 4 | Current range error or aveTi range error |
| | | 5 | Motor/power supply characteristic constants (Fuka_kc, Fuka_kd) calculation error |
| | | 6 | I_cur_chk range error |
| | | 7 | Abnormal cycle detection accumulated count error |
| | | 8 | Velocity variation/segment variation error |
| | | 9 | CSV output error |
| | BACK FEED PITCH Misalignment Adjustment | 1 | Adjustment pattern printing error |
| | BM/Fanfold Paper Margin Adjustment | 1 | Paper Setting failed |
| | | 2 | Initialization of adjustment value failed |
| | | 3 | Writing the adjustment value failed or adjustment pattern printing error |

| Menu | Adjustment Item | Error code | Description |
|---|---|---|---|
| Check result | Roll Paper Print Test | 1 | Adjustment pattern printing error |
| | A/C Duration Test | 1 | Cutter operation failed |
| | | 2 | Paper data acquisition error |
| | Aging of the Carriage Set | 1 | CR position transfer error |
| | Fanfold Paper Print Test | 1 | Adjustment pattern printing error |
| Setting | Input Head ID | 1 | Dummy USB ID generation error |
| | | 2 | Dummy USB ID writing error |
| | | 3 | Head ID class generation error |
| | | 4 | Head ID's EEPROM address defined size error |
| | | 5 | Input Head ID screen Abort |
| | | 6 | Head ID character string → data conversion error |
| | | 7 | Head ID writing error |
| | | 8 | EEPROM writing information error |
| | | 9 | EEPROM writing error |
| | Input Serial Number | 1 | Serial No input error |
| | | 2 | Serial No format error |
| | | 3 | EEPROM writing error Serial No |
| | | 4 | EEPROM writing error USB ID |

| Menu | Adjustment Item | Error code | Description |
|---|---|---|---|
| Setting | Market ID | 1 | Dummy USB ID generation error |
| | | 2 | Dummy USB ID writing error |
| | | 3 | Head ID class generation error |
| | | 4 | Head ID's EEPROM address defined size error |
| | | 5 | Input Head ID screen Abort |
| | | 6 | Head ID character string → data conversion error |
| | | 7 | Head ID writing error |
| | | 8 | EEPROM writing information error |
| | | 9 | EEPROM writing error |
| | Initial Charging | 1 | Nozzle Check printing error |

✓ Check

To close the error screen, press [Alt] and [F4] on the keyboard together.

# Mechanism Adjustment

## Gap adjustment (Between the Roller Set and the Platen)

This allows you to adjust the gap between the roller set and the platen.

Check

☐ Make sure to install the printer horizontally to carry out this adjustment.

☐ Before performing this adjustment, make sure that the carriage unit (0005) and the platen sub unit (511) are correctly installed. (See page 143, " Rear F/F Paper Guide Sub Unit" and page 187, " Platen Sub Unit")

1. Slowly insert a 0.3-mm thickness gauge into position A as shown in Figure 5-8, and confirm that the thickness gauge does not touch the roller set (or the roller does not turn).
    - If the 0.3-mm thickness gauge does not touch the roller set:
      Go to step 2.
    - If the 0.3-mm thickness gauge touches the roller set:
      Loosen the 3 screws fixing the front fixed holder assembly. Remove and install the front fixed holder assembly, and return to step 1.
2. Slowly insert the 0.5-mm thickness gauge into position A, as shown in Figure 6-11, and confirm the thickness gauge touches the roller set (and the roller turns).
    - If the 0.5-mm thickness gauge does not touch the roller set:
      Loosen the 3 screws fixing the front fixed holder assembly. Remove and install the front fixed holder assembly, and return to step 1.
    - If the 0.5-mm thickness gauge touches the roller set:
      Adjust point B with the same steps.

CAUTION

Install the front fixed holder assembly parallel to the platen. Otherwise, paper can be skewed.

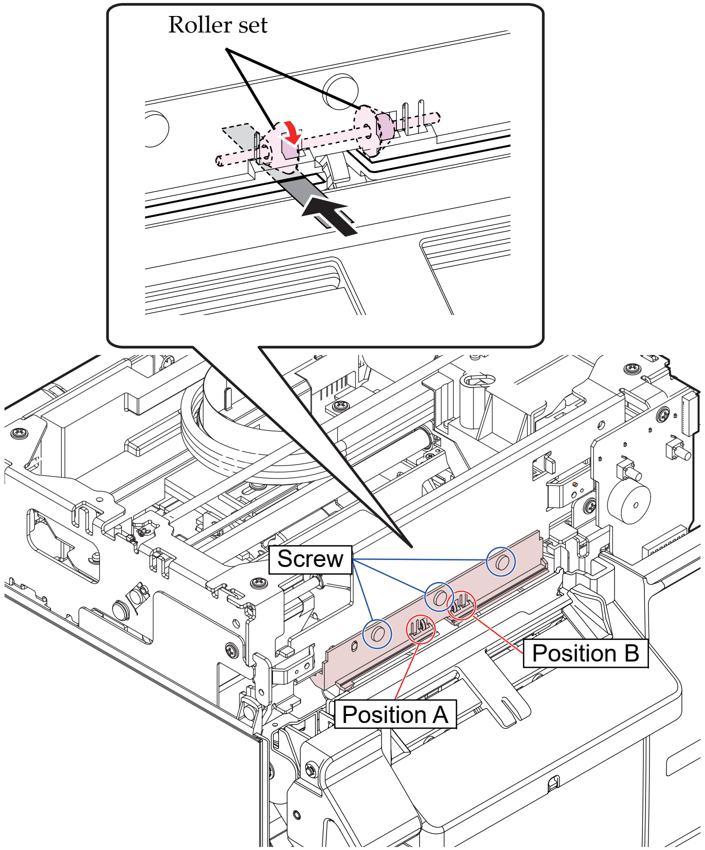


Figure 6-11. Gap adjustment (Between the Roller Set and the Platen)

# Adjustment

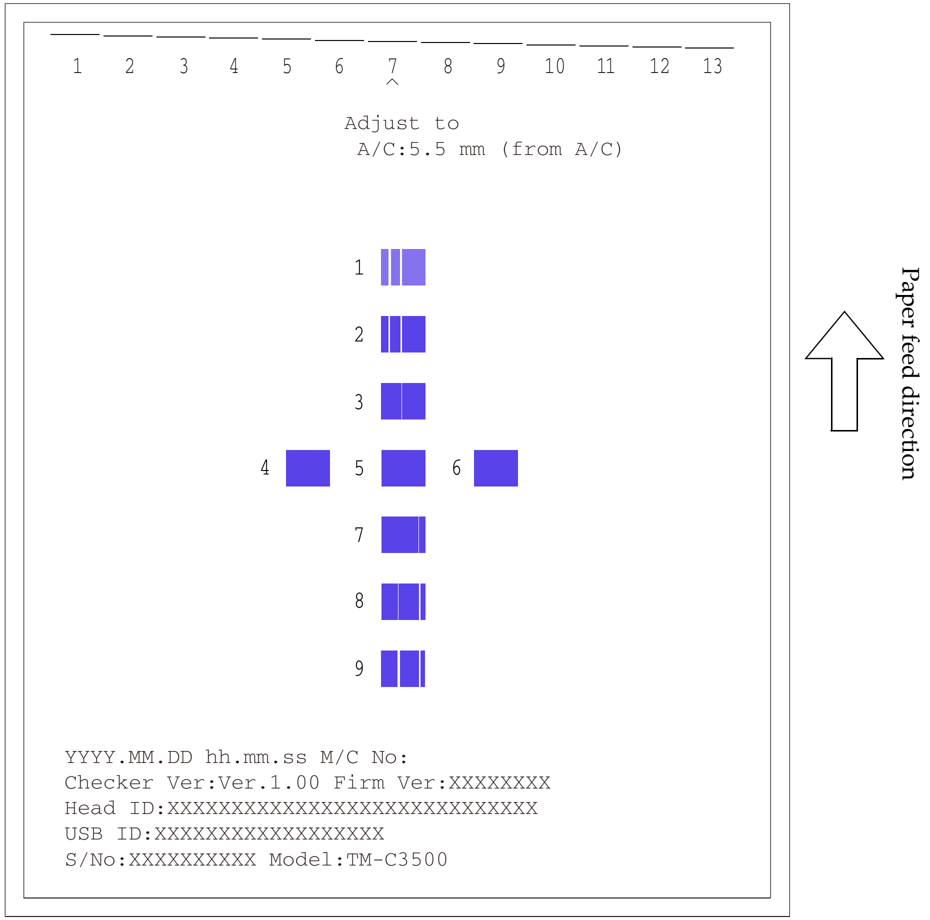
## Bi-d(VSD1) / AC Adjustment

This adjusts the timing of firing ink drops (VSD1) and auto cut position in bi-directional printing.

### Checking procedure

1. Set the label inspection sheet on the printer. (See page 66, " Installing the Roll Paper.")
2. Click [Bi-d(VSD1)/AC Adjust], and print the adjustment pattern.
3. The current setting is the pattern in position number 5. Make sure no white vertical lines are printed in the pattern in position number 5. Input the number of the most appropriate print pattern.
4. Enter the number 5.5 mm from the top into the Adjustment Program.

> **Check**
>
> The pattern you selected will be printed in position number 5 the next time you print the Bi-d adjustment patterns.



```
Adjust to
 A/C:5.5 mm (from A/C)
```

```
YYYY.MM.DD hh.mm.ss M/C No:
Checker Ver:Ver.1.00 Firm Ver:XXXXXXXX
Head ID:XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
USB ID:XXXXXXXXXXXXXXXXXX
S/No:XXXXXXXXXX Model:TM-C3500
```

**Figure 6-12. Bi-d(VSD1)/AC adjustment pattern**

## GAP / Roll paper Margin Adjustment

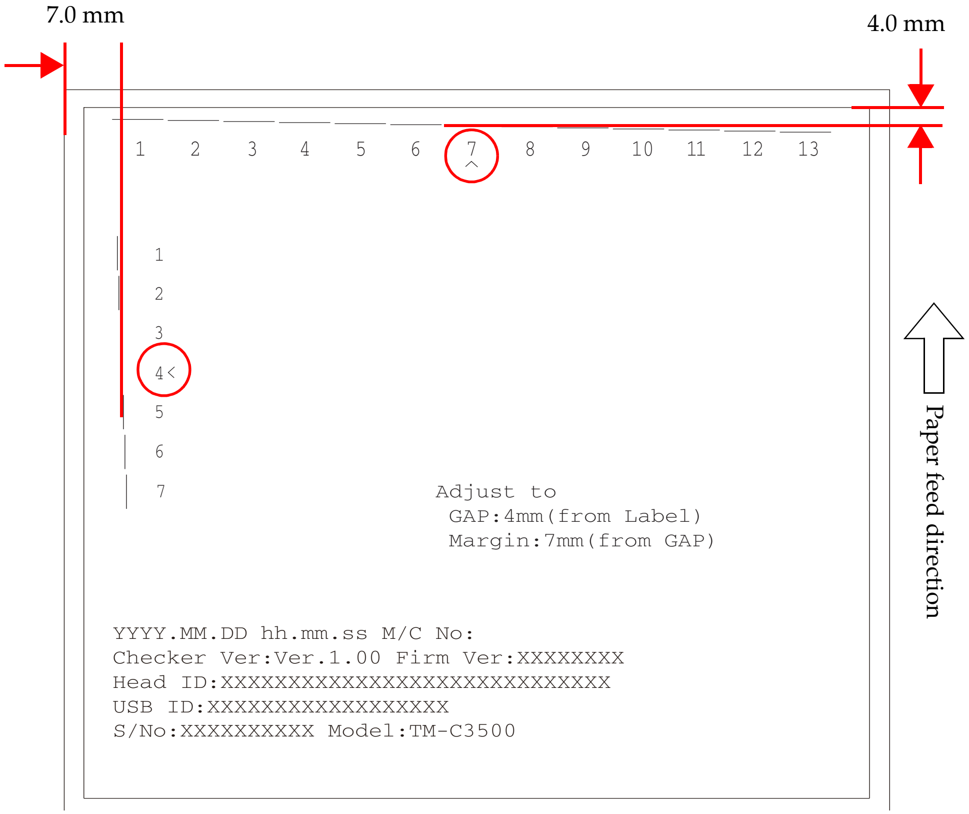
This adjusts the top margin of label paper and the print start position.

### Checking procedure

1. Set the label inspection sheet on the printer. (See page 66, " Installing the Roll Paper.")
2. Click [GAP & Roll paper Margin Adjust], and print the adjustment pattern.

> **Check**
>
> When the adjustment pattern is being printed, the first page is blank, then the adjustment pattern is printed on the second page.

3. Identify the number of the line 4.0 mm from the top of the paper using a caliper or a scale, then enter the value in “GAP Adjust”.
4. Identify the number of the line 7.0 mm from the left end of the paper using a caliper or a scale, then enter the value in “Margin Adjust”.
5. If the optimal pattern for GAP Adjust is “7”, and “4” for Margin Adjust, click [FINISHED ADJUST(ENTER)]. For the numbers other than those mentioned earlier, click [PRINT AGAIN[ESC]] to print and check again.



```
Adjust to
 GAP:4mm(from Label)
 Margin:7mm(from GAP)

YYYY.MM.DD hh.mm.ss M/C No:
Checker Ver:Ver.1.00 Firm Ver:XXXXXXXX
Head ID:XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
USB ID:XXXXXXXXXXXXXXXXXX
S/No:XXXXXXXXXX Model:TM-C3500
```

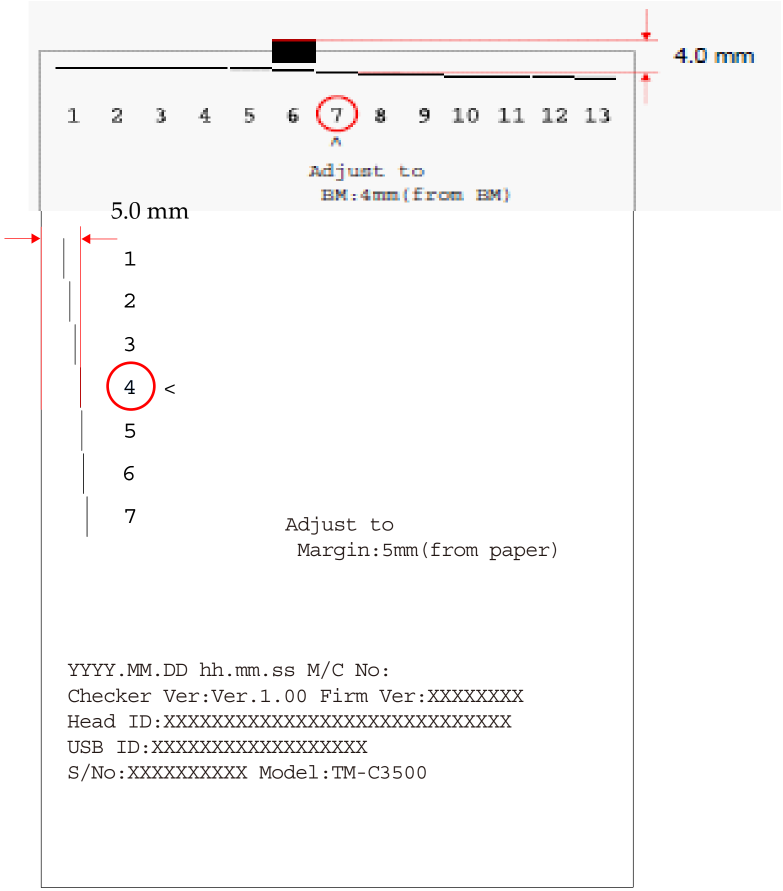
**Figure 6-13. GAP & Roll paper Margin adjustment pattern**

# BM/Fanfold Paper Margin Adjustment

This allows you to adjust print starting position with black marks and adjust the fanfold paper width.

## Checking procedure

1. Set an FF inspection sheet. (See page 69, " Installing Fanfold Paper.")
2. Print the black mark (BM) print starting position adjustment pattern, and input the number corresponding to the point where the horizontal line is 4.0 mm from top edge of the black mark to the edit box of “BM” of the Adjustment Program.
3. Print the fanfold paper print starting position horizontal pattern, and input the number beside the vertical line that is 5.0 mm from left edge of the paper to the edit box of “FF margin” of the Adjustment Program.
4. Click the "Again [Esc]" button to print the adjustment pattern again, then execute readjustment.
5. Click the "Finish [Enter]" button to return the menu.



```
Adjust to
 BM:4mm(from BM)
```

```
Adjust to
 Margin:5mm(from paper)
```

```
YYYY.MM.DD hh.mm.ss M/C No:
Checker Ver:Ver.1.00 Firm Ver:XXXXXXXX
Head ID:XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
USB ID:XXXXXXXXXXXXXXXXXX
S/No:XXXXXXXXXX Model:TM-C3500
```

**Figure 6-14. BM / Fanfold paper print starting position horizontal pattern**

# PF Adjust

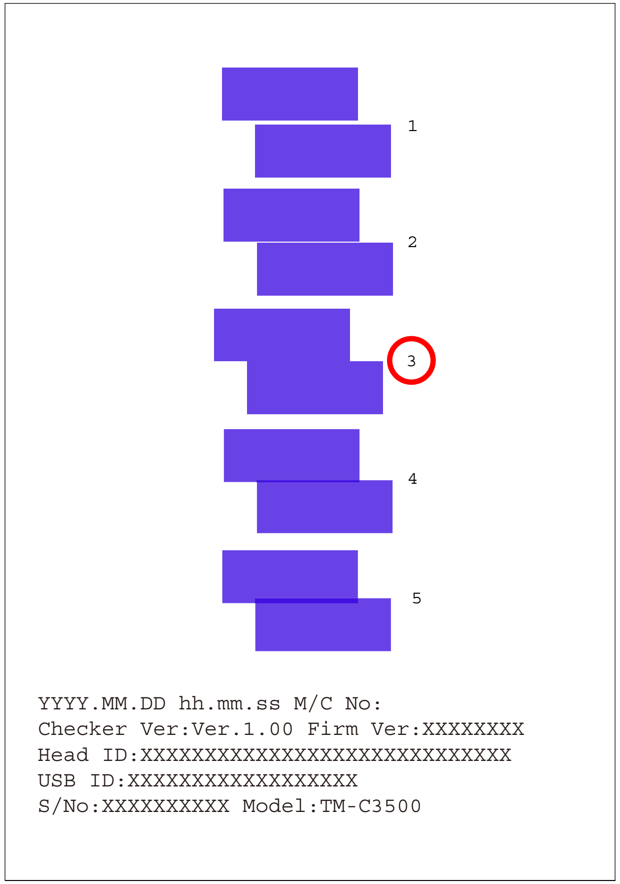
This allows you to adjust the variability of paper feed by each mechanism or by media delivery characteristics.

## Checking procedure

1. Set the label inspection sheet on the printer. (See page 66, " Installing the Roll Paper.")
2. Click [PF Adjust], and print the adjustment pattern.

> Check
>
> When the adjustment pattern is being printed, the first two pages are blank, then the adjustment pattern is printed on the third page.

3. Select the number of the pair where the patterns do not have a white line in between in the adjustment pattern, and do not overlap each other. If every pattern satisfies the conditions above, select the most appropriate pattern, and repeat printing and evaluation.
4. If the optimal pattern is “3”, the adjustment is complete. For the numbers other than “3”, select the optimal pattern, then print and judge repeatedly until the optimal pattern becomes “3”.



```
YYYY.MM.DD hh.mm.ss M/C No:
Checker Ver:Ver.1.00 Firm Ver:XXXXXXXX
Head ID:XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
USB ID:XXXXXXXXXXXXXXXXXX
S/No:XXXXXXXXXX Model:TM-C3500
```

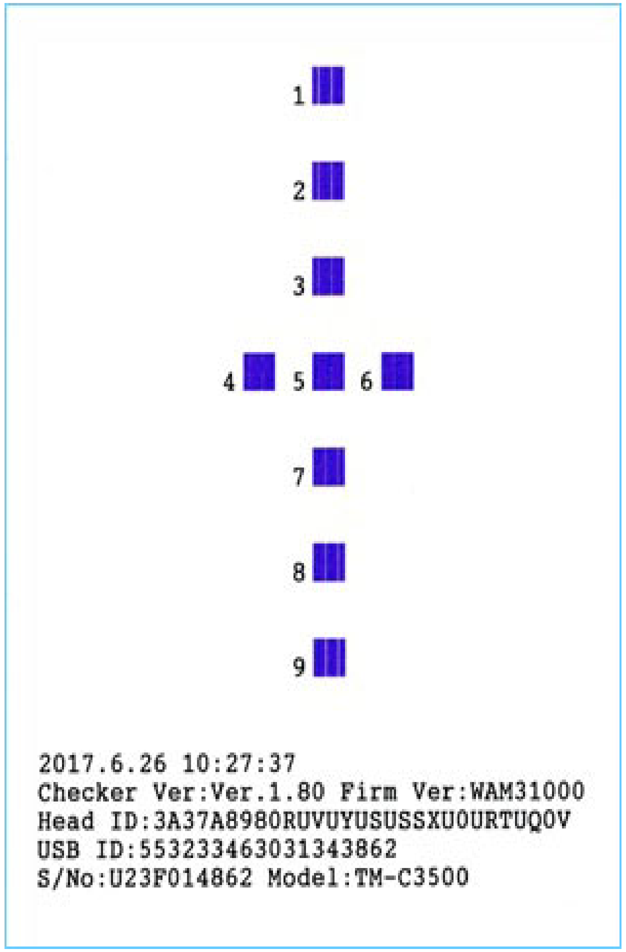
**Figure 6-15. PF adjustment pattern**

## Bi-d (VSD4) Adjustment

This allows you to adjust Bi-d (VSD4).

### Checking procedure

1. Set the label inspection sheet on the printer. (See page 66, " Installing the Roll Paper.")
2. The current setting will be printed at the position of 5. When the Bi-d adjustment value will be changed, the changed pattern will be printed at the position of 5.
3. In the printed patterns, choose the one with the least white line. Input the number of that pattern to the edit box of “Bi-D” of the Adjustment Program.
4. When pressing the “Again [Esc]” button, the adjustment pattern will be printed. Please confirm the each printed result. If necessary, execute this adjustment again.
5. Click the “Finish [Enter]” to finish the adjustment.



```
2017.6.26 10:27:37
Checker Ver:Ver.1.80 Firm Ver:WAM31000
Head ID:3A37A8980RUVUYUSUSSXU0URTUQ0V
USB ID:553233463031343862
S/No:U23F014862 Model:TM-C3500
```

**Figure 6-16. Bi-d(VSD4) adjustment pattern**

# Fan Rotation Adjustment

This allows you to adjust the variability of fan rotation for each printer.

## Checking procedure

The fan rotation adjustment will be executed automatically by the Adjustment Program.

## *GAP voltage / Threshold Adjustment*

This allows you to adjust the proper range for the variable resistance of the label detector.

Check

Before doing this adjustment, make sure that the cables of the main circuit board unit are routed correctly.
(See page 197, " Main Circuit Board Unit")

1. Set the inspection sheet on the printer. (See page 69, " Installing Fanfold Paper.")
2. Connect the printer with the computer, and turn the printer power ON.
3. Double-click [GAP voltage / Threshold Adjustment] from “1.Adjust” in the Adjustment program.
4. Click “Start”.
5. Rotate the adjustment screw (VR1) on the main circuit board unit to make the value displayed on the Adjustment Program in the standard value. (Standard value: 1.34 ± 0.1 V)
6. After this adjustment, click “FINISHED ADJUST [ENTER]” in the window.
7. The inspection sheet is fed in 7-mm increments. It measures the voltage every 7 mm automatically. Then, the program calculates an average of 10 times.
    - If the average is in 1.34 ± 0.1 V:
      Click “OK” in the window and complete the adjustment.
    - In the average is out of 1.34 ± 0.1 V:
      Click “NG” in the window and return to step 4.
8. Secure the adjustment screw on the main circuit board unit by the SCREW LOCK.

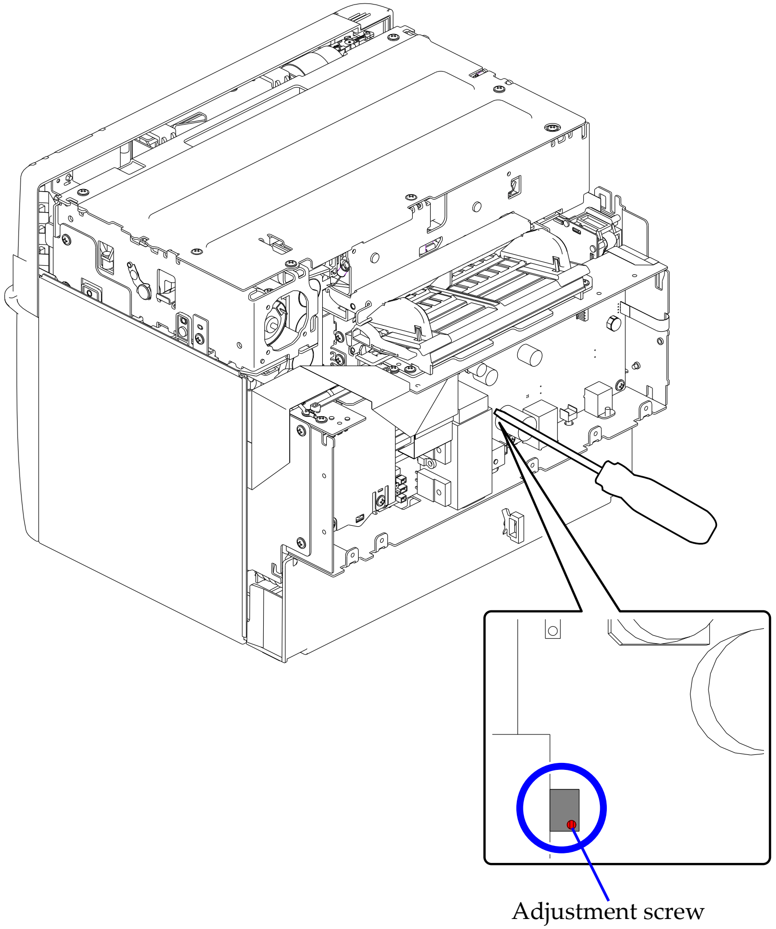


**Figure 6-17. GAP voltage/threshold adjustment**

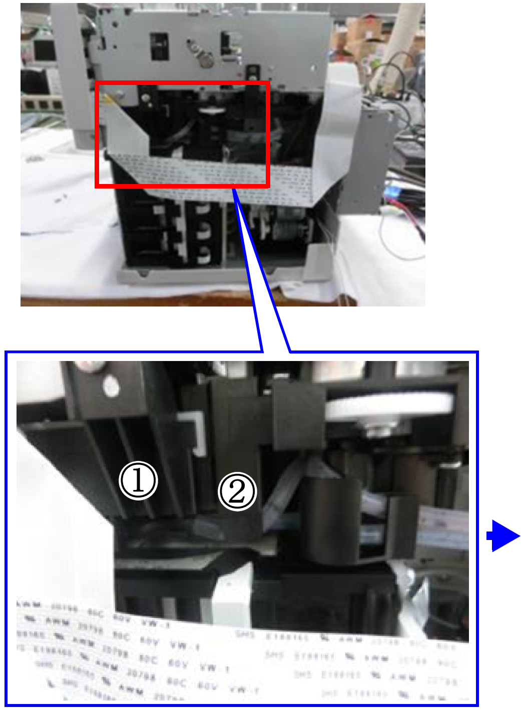
## AID Output Level Check

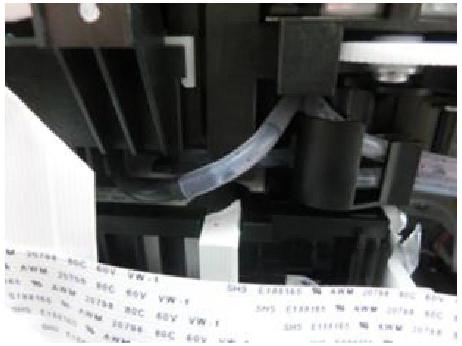
This is used to check the AID output level.

### Preparation

Release the tube of the IS pump unit (518) from the two hooks in the order shown in the below picture.

**Check** Release only the front side tube.





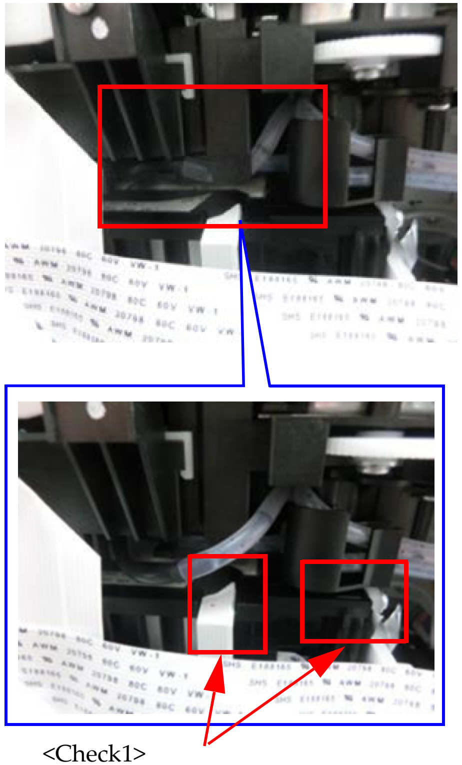
After releasing the tube

### Checking procedure

1. Set the inspection roll paper on the printer. (page 66, " Installing the Roll Paper.")
2. Double-click the [AID Output Level Check] to print the nozzle check pattern.
   When the printed check pattern is correct, click the "OK [Enter]" button to check the AID output level.
   Click the "Cancel [Esc]" button to return to the menu without check.

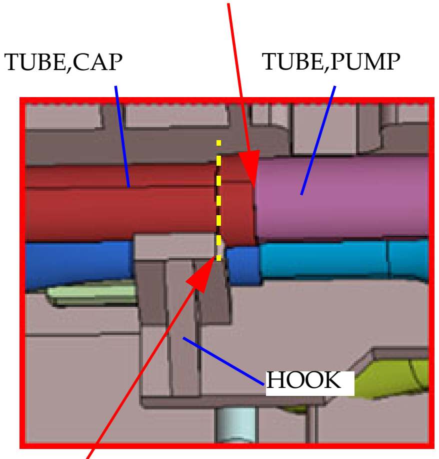
*Please wait a few minutes to execute the AID output level check.

3. Put the wasted ink tube under the cap back again after showing the pop-up message of "Connect Tube".



<Check1>
Route the tube of the IS PUMP UNIT through the two hooks.

<Check3>
There is no gap between TUBE,PUMP and TUBE,CAP.



<Check2>
There is the thick part in TUBE,CAP on the right side more than HOOK.

4. Click the "OK[Enter]" button.
5. "Nozzle Pattern OK?" will be displayed. When the printed check pattern is normal, click the "Yes [Enter]" button.
   Please wait a few minutes to write the AID output level to the printer.

When the printed check pattern is abnormal, press "No [Esc]" button. Then the message of the "Execute CL1?" will be displayed.

Click the "OK [Enter]" button to execute the manual cleaning.

The nozzle check pattern will be printed again after executing the manual cleaning. Then return to the "5".

Click the "Cancel [Space]" button to return the menu.

## BACK FEED PICTH Misalignment Adjustment

This allows you to adjust the printing slant for fanfold paper.

Check
- ☐ Before the adjustment, engage one end of the PF hold spring with the center of the grooves in the main roller hold assembly.
- ☐ Do not touch the CR scale when you perform this adjustment.

1. Set the inspection roll paper on the printer. (See page 66, " Installing the Roll Paper.")
2. Connect the printer with the computer, and turn the printer power ON.
3. Double-click [BACK FEED PICTH Misalignment Adjustment] from “1.Adjust” in the Adjustment program.
4. Click [OK] after clicking the [print], and print the backfeed pitch misalignment adjustment pattern.
5. Check the Backfeed Pitch misalignment adjustment pattern, and move the end of the PF hold spring to the right or left direction where the width is narrower in the printed pattern.
6. Print the backfeed pitch misalignment adjustment pattern again, and repeat the steps 3 to 5 until the width between 2 horizontal lines falls within 0.1 mm.
   Difference between the widths on the left and right = $|2d| \leq 0.05$ mm

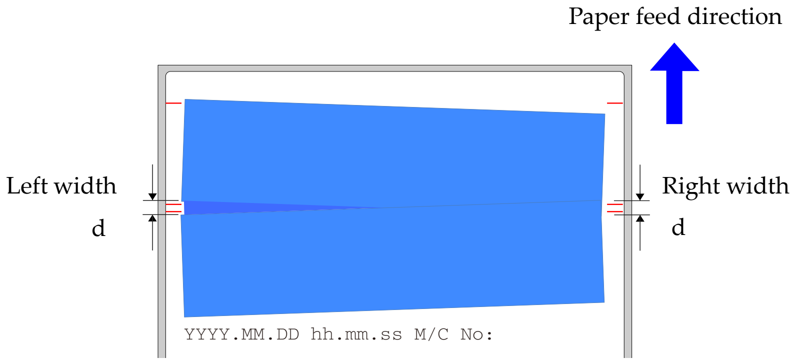


Figure 6-18. Backfeed Pitch misalignment adjustment pattern

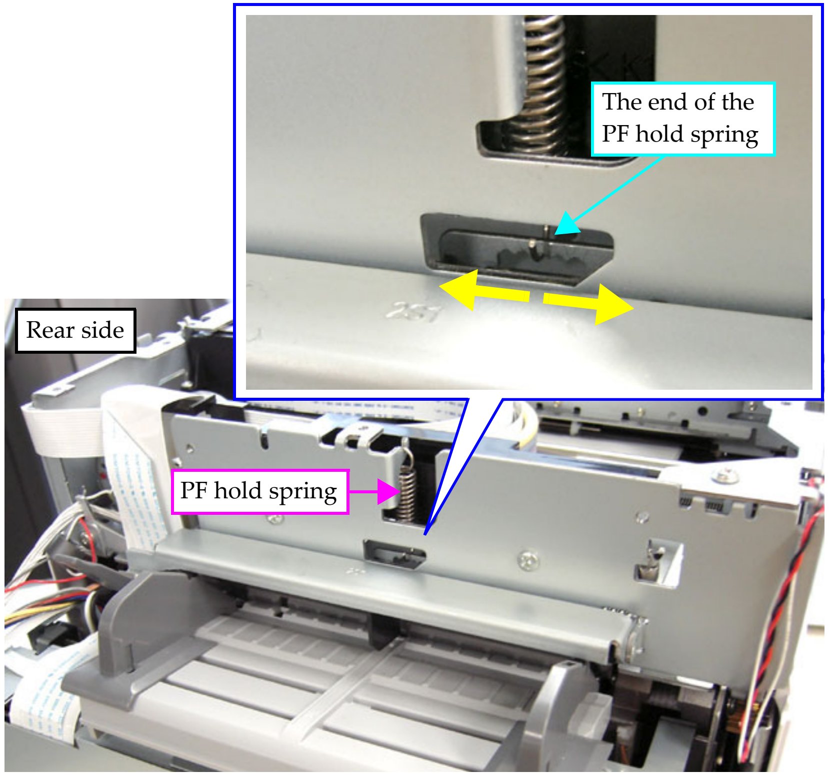


Figure 6-19. Backfeed Pitch misalignment adjustment

# *Write*

## *Input Head ID*

### *Input procedure*

Check the head ID on the label attached to the side of the print head, and input it into the Adjustment Program.

**Check**

- ☐ You need to input the head ID only if the data cannot be read from the broken circuit board.
- ☐ The letter "O" in the alphabet is not used in head ID numbers. Head numbers can only contain a numeric "0" (zero).

When the appropriate head ID is input, it is written to the EEPROM, and "Succeed" is displayed. If the head ID is not the right one, Input Head ID cannot be completed.

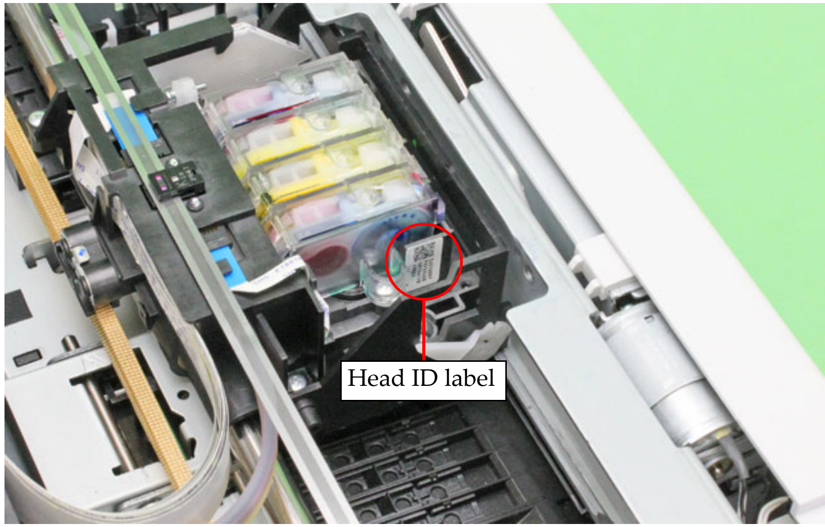


**Figure 6-20. Head ID label position**

## *Input Serial Number*

### *Input procedure*

Check the serial number on the label attached to the right side of the printer, and input it into the Adjustment Program.

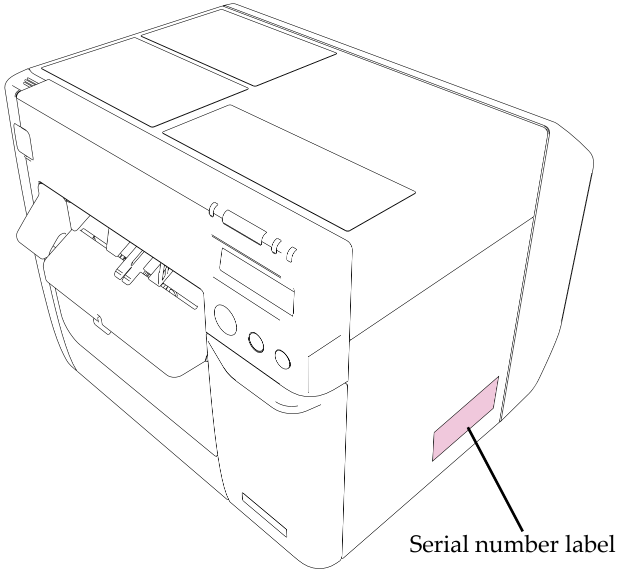


**Figure 6-21. Serial number label position**

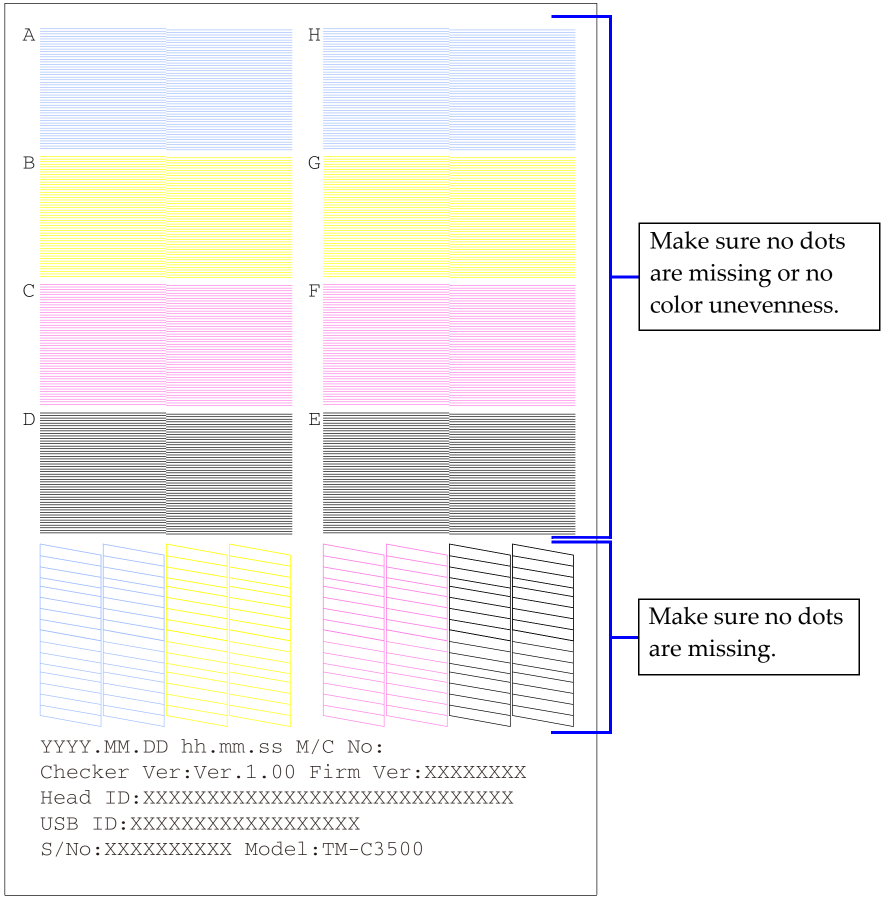
# *Print / Test / Check*

## *Nozzle Check Pattern*

This allows you to check that missing dots do not occur in printed nozzle check pattern.

### *Checking procedure*

1. Set the label inspection sheet on the printer. (See page 66, " Installing the Roll Paper.")
2. Print a nozzle check pattern and check the result. If any of the pattern is missing or ink is uneven, run “Cleaning” from the Adjustment Program.



```
YYYY.MM.DD hh.mm.ss M/C No:
Checker Ver:Ver.1.00 Firm Ver:XXXXXXXX
Head ID:XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
USB ID:XXXXXXXXXXXXXXXXXX
S/No:XXXXXXXXXX Model:TM-C3500
```

Make sure no dots are missing or no color unevenness.

Make sure no dots are missing.

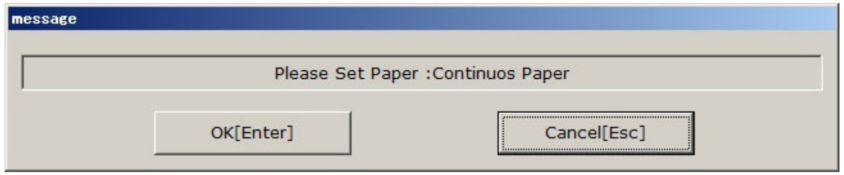
**Figure 6-22. Nozzle check pattern**

## *Head Slant Check*

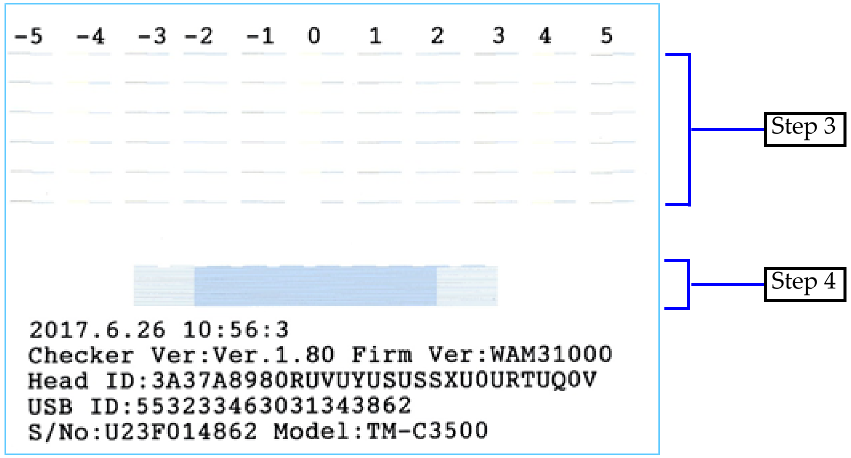
This allows you to check the slant of the print head.

### *Checking procedure*

1. Set the inspection roll paper on the printer. (See page 66, " Installing the Roll Paper.")
2. Double-click [Head Slant Check] from “3. Adjustment” in the Adjustment program. "Please Set Paper: Continuous Paper" will be displayed, then click the "OK [Enter]" button.



Please Set Paper :Continuos Paper



```
2017.6.26 10:56:3
Checker Ver:Ver.1.80 Firm Ver:WAM31000
Head ID:3A37A8980RUVUYUSUSSXU0URTUQ0V
USB ID:553233463031343862
S/No:U23F014862 Model:TM-C3500
```

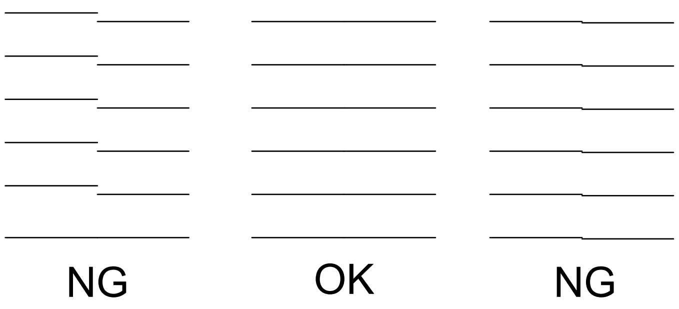
Figure 6-23. Head slant adjustment pattern

3. Printing the head slant adjustment pattern, make sure the number of the column best aligned in a straight line. (Figure 6-23)

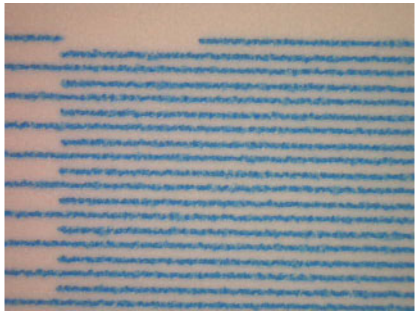
**Check**

☐ If the selected number of the best aligned column is “0”, the following adjustment is not necessary.

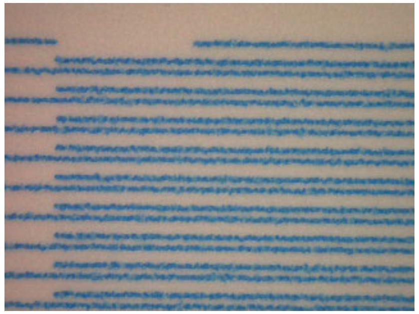
☐ Example for judgment.



4. Make sure that the horizontal line is aligned with equal interval. (Figure 6-23)

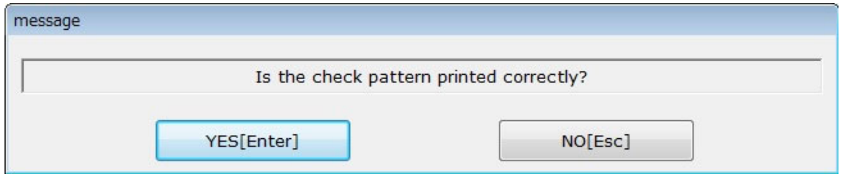


OK



NG

5. "Is the check pattern printed correctly?" will be displayed.
   When the selected number of the best aligned column is “0” and the horizontal line is aligned with equal interval, click "Yes [Enter]" button to finish the adjustment.
   If not, execute after Step 6.



message

Is the check pattern printed correctly?

6. Loosen the three screws that secure the print head (528).
7. Adjust the inclination adjust lever to the number acquired in Step 3 using a flat-blade screwdriver or the like.
8. Tighten the two screws of the print head (528) in the order given in the Figure 6-24.
9. Click "NO [Esc]" button to print the Head Incline Adjustment print pattern again.

> **Check**
>
> Repeat Step 3 to Step 9 until the number of the column best aligned in a straight line becomes "0".

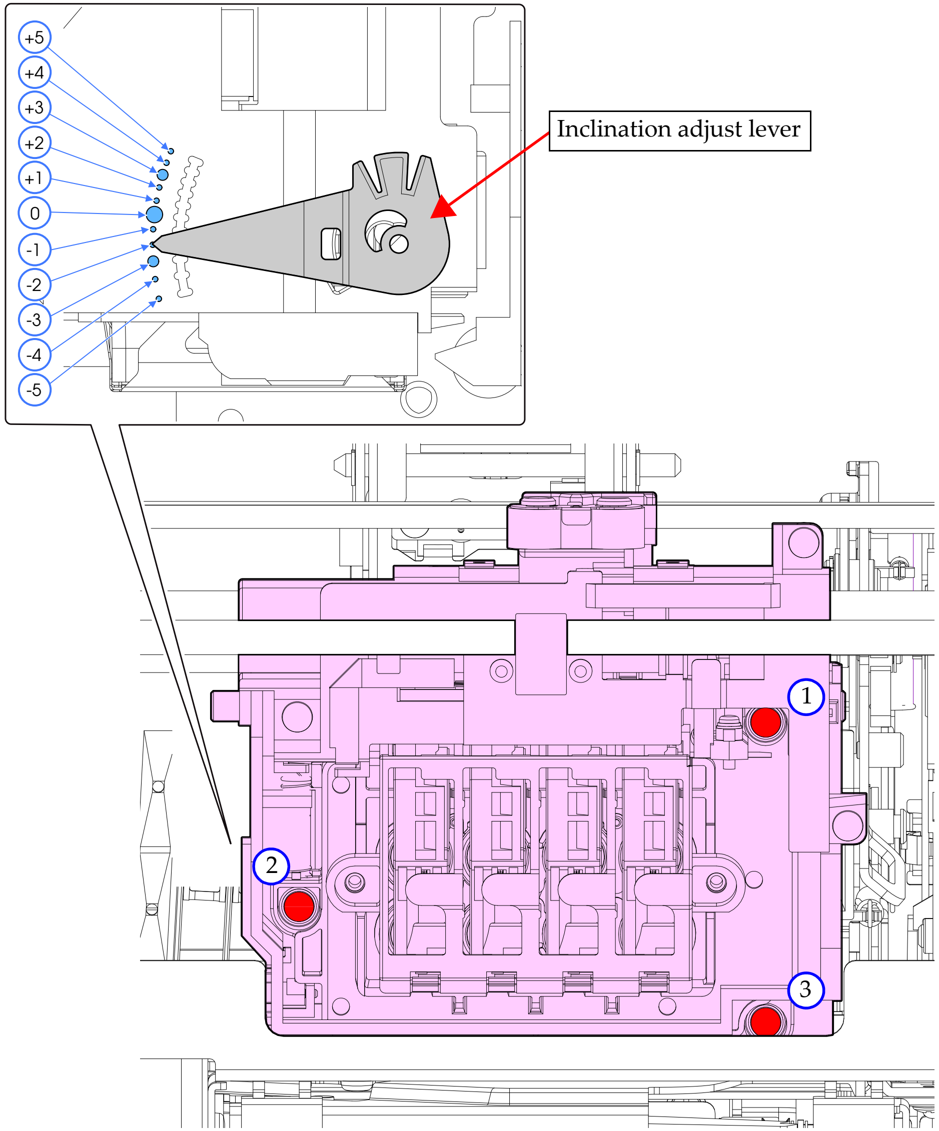


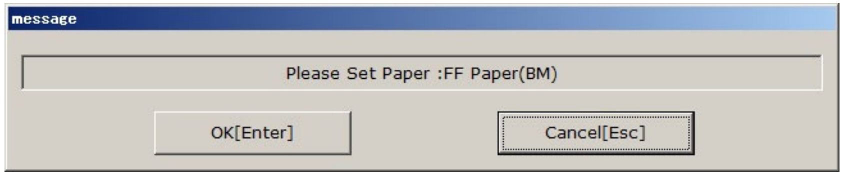
**Figure 6-24. Head Incline Adjustment**

## Fanfold Paper Print Test

Make sure to run a test print after disassembly/assembly of the printer, after replacing parts, or after each adjustment, and perform a printing adjustment if any error occurs.

### Checking procedure

1. Set a FF inspection sheet. (See page 69, " Installing Fanfold Paper.")
2. Double-click the [Fanfold Paper Print Test] to print the check pattern.
   "Please Set Paper: FF Paper (BM)" will be displayed, then click the "OK [Enter]" button.


message
OK[Enter]
Cancel[Esc]

Please Set Paper :FF Paper(BM)

3. Restart the printer automatically, then print the check pattern.
4. Check the fanfold paper test pattern, and perform each adjustment if necessary.

<Standard>

- BM Adjustment: Distance between the horizontal line and the Black mark 1.5+/-0.4 mm
- Fanfold Paper Margin Adjustment: Distance between the vertical line and the left edge of the paper 1.5+/-1.2mm

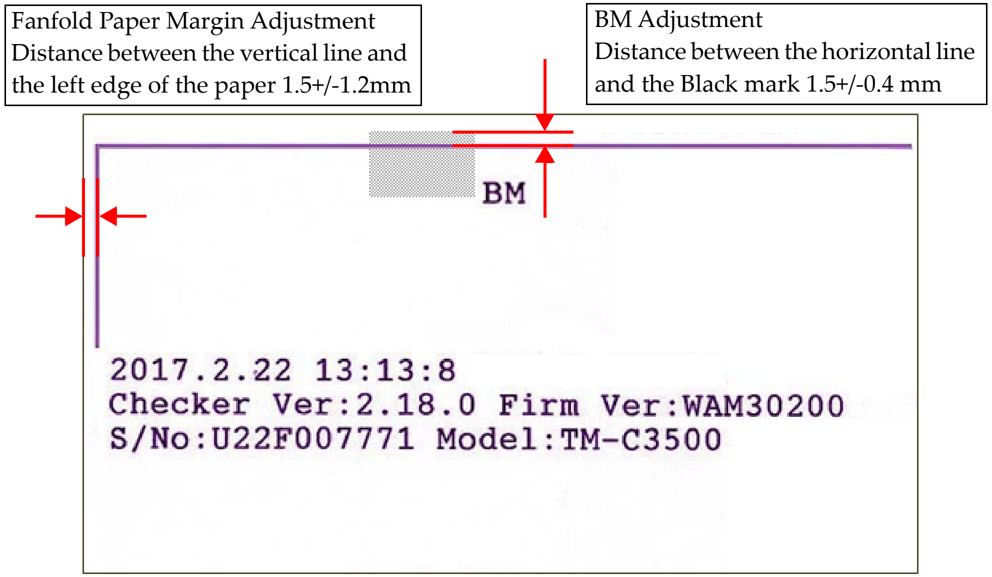

Fanfold Paper Margin Adjustment
Distance between the vertical line and the left edge of the paper 1.5+/-1.2mm
BM Adjustment
Distance between the horizontal line and the Black mark 1.5+/-0.4 mm
BM
2017.2.22 13:13:8
Checker Ver:2.18.0 Firm Ver:WAM30200
S/No:U22F007771 Model:TM-C3500

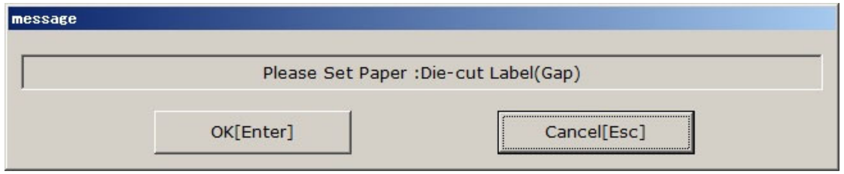
**Figure 6-25. Fanfold paper test pattern**

# Roll Paper Print Test

Make sure to run a test print after disassembly/assembly of the printer, after replacing parts, or after each adjustment, and perform a printing adjustment if any error occurs.

## Checking procedure

1. Set the label inspection sheet on the printer. (See page 66, " Installing the Roll Paper.")
2. Double-click the [Roll Paper Print Test] to print the check pattern.
   "Please Set Paper: Die-cut Label(Gap)" will be displayed, then click the "OK [Enter]" button.



message

Please Set Paper :Die-cut Label(Gap)

3. Restart the printer automatically, then print the check pattern.
4. Check the roll paper test pattern, and perform each adjustment if necessary.

<Standard>

- GAP adjustment: the distance between the horizontal line and the top edge of the label 1.5+/-0.4 mm
- Roll Paper Margin Adjustment: the distance between the vertical line and the left edge of the pasted board 3.5+/-1.2mm
- Nozzle Check: Make sure no dots are missing or no color unevenness.
- Head Slant Check1: Check if the vertical line is straight and without any breaks.
- Head Slant Check2: Make sure that the horizontal line is aligned with equal interval.
- Auto-cutter Adjustment: the distance between the top edge of the label and the top edge of the pasted board 1.5+/-0.4 mm
- BACK FEED PITCH Misalignment Adjust: the width between 2 horizontal lines falls within 0.05mm
- PF Adjust: Make sure no wrapped printing /white line is printed.
- Bi-d Adjustment: Make sure no vertical lines are printed.

Note: This adjustment can not be executed without the label paper and the ink cartridge are installed.

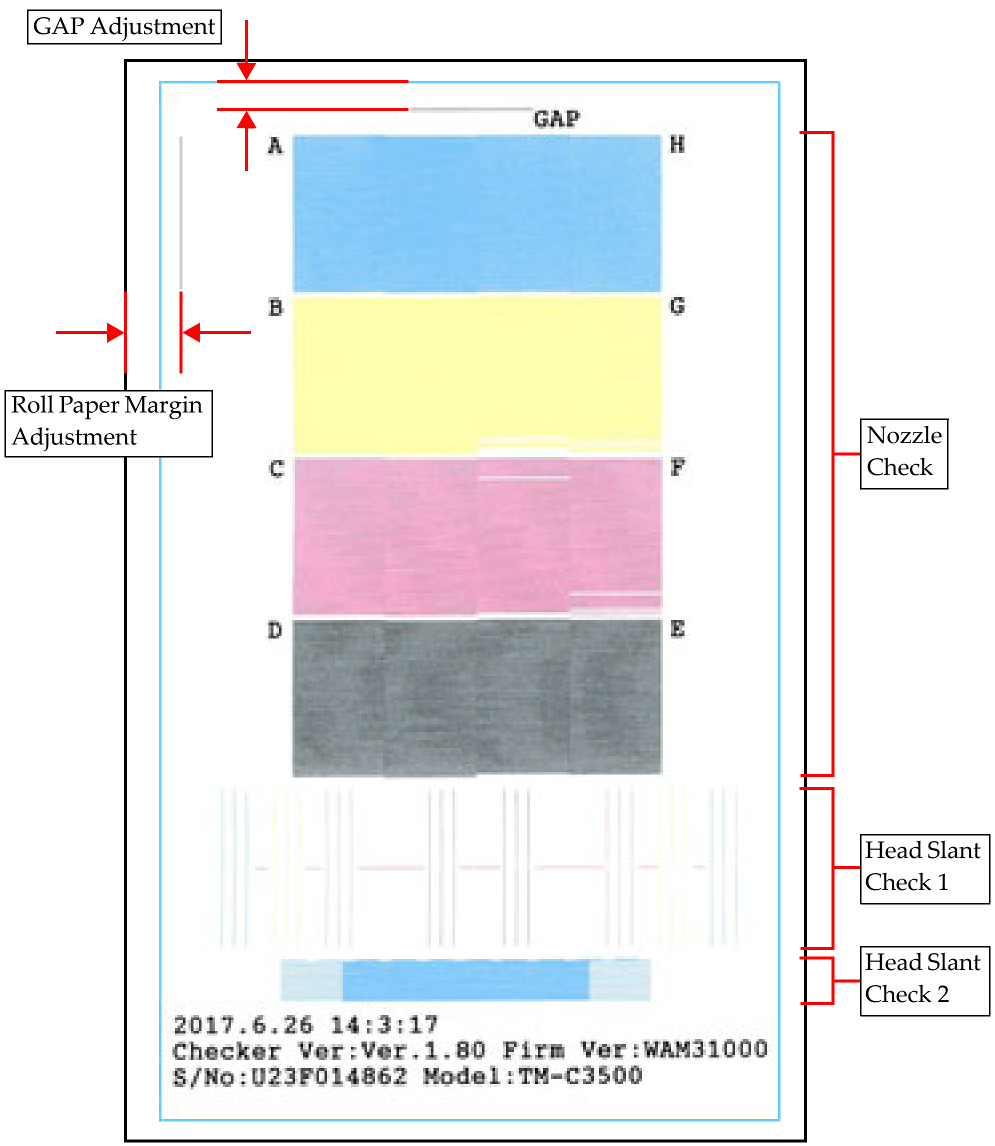

GAP Adjustment
GAP
A
H
B
G
C
F
D
E
Roll Paper Margin Adjustment
Nozzle Check
Head Slant Check 1
Head Slant Check 2
2017.6.26 14:3:17
Checker Ver:Ver.1.80 Firm Ver:WAM31000
S/No:U23F014862 Model:TM-C3500

**Figure 6-26. Roll paper test pattern (1)**

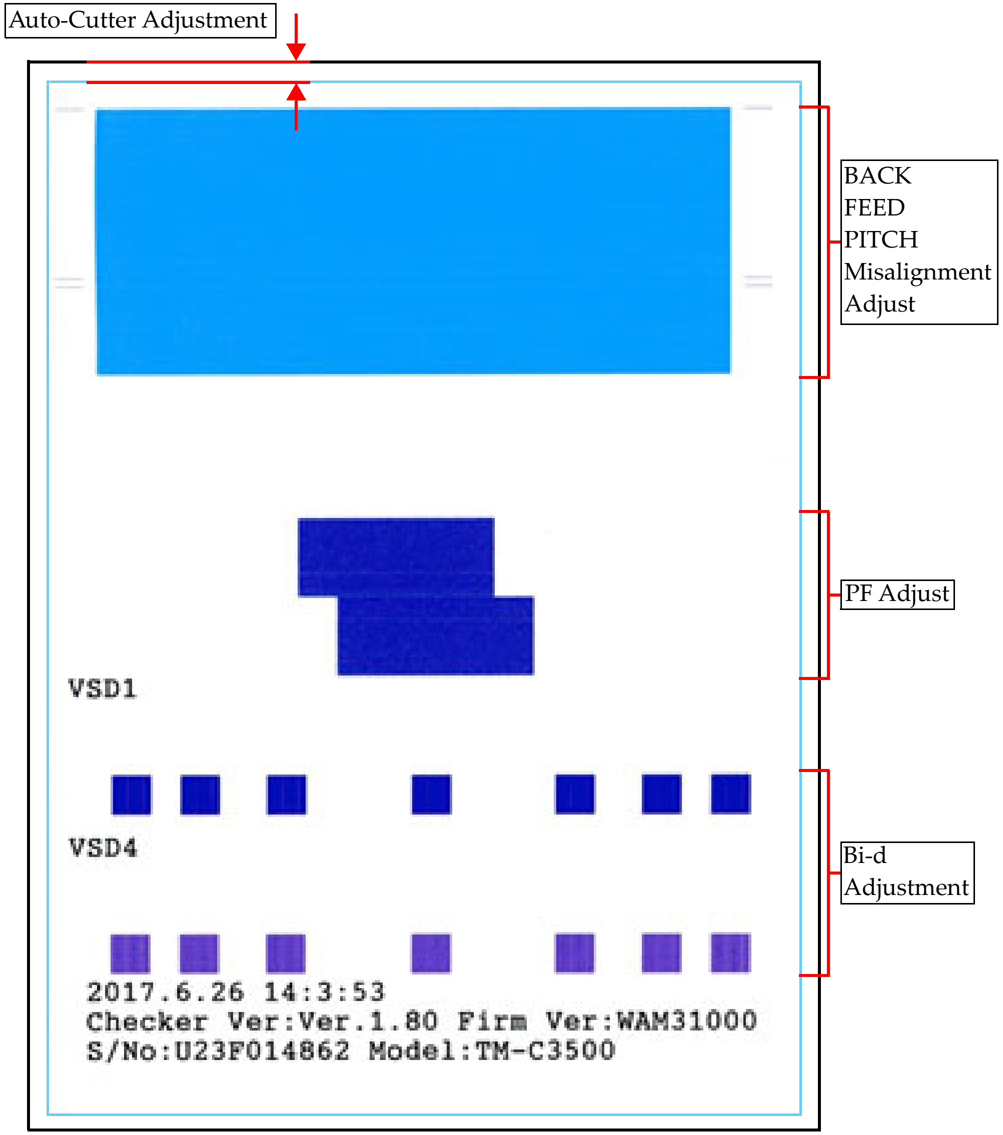

Auto-Cutter Adjustment
BACK FEED PITCH Misalignment Adjust
PF Adjust
VSD1
VSD4
Bi-d Adjustment
2017.6.26 14:3:53
Checker Ver:Ver.1.80 Firm Ver:WAM31000
S/No:U23F014862 Model:TM-C3500

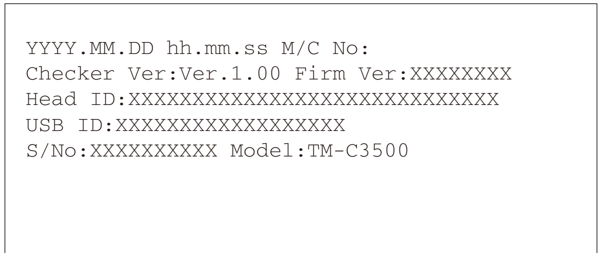
**Figure 6-27. Roll paper test pattern (2)**

# Print Printer Settings

This printout is to display the values in the EEPROM.

## Checking procedure

1. Set the label/FF inspection sheet on the printer. (See page 66, " Installing the Roll Paper.", page 69, " Installing Fanfold Paper.")
2. Print the settings and check them.



```
YYYY.MM.DD hh.mm.ss M/C No:
Checker Ver:Ver.1.00 Firm Ver:XXXXXXXX
Head ID:XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
USB ID:XXXXXXXXXXXXXXXXXX
S/No:XXXXXXXXXX Model:TM-C3500
```

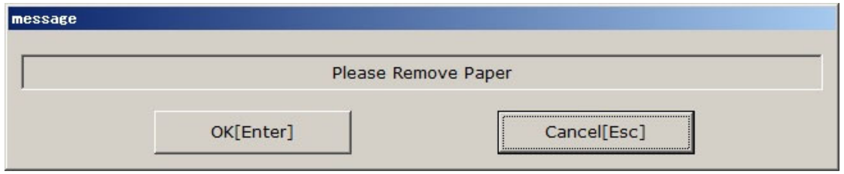
**Figure 6-28. Print Printer Settings**

# A/C duration test

This is used to execute the endurance test of the printing.

## Checking procedure

1. Double-click the [A/C Duration Test] to start the endurance test.
2. "Please Remove Paper" will be displayed, then remove the paper from the printer.



Please Remove Paper

3. Click the "OK [Enter]" button to start the endurance test.
4. Click the "Cancel [Esc]" button to return to the menu without the endurance test.

# Analyze

## Printer Information

This is to read and display the following printer information.

| | |
|---|---|
| Printer Information | Device ID |
| | Head ID |
| | Serial No. |
| | Firm Version |
| | Market ID |
| | I/F Model |
| | Paper mode |
| Adjusted item | Serial No. |
| | Head ID |

## Initial Charging Flag ON/OFF

### Initial Charging Flag ON

Set “Initial charging flag ON” to set the flag that causes the printer to perform an initial ink charge when an ink cartridge and roll paper are installed and the printer is reset.

> **CAUTION**
>
> When ink is in the ink path, do not perform the initial charge with the Initial Charging Flag ON. Doing so may cause waste ink leakage from the maintenance box because waste ink generated during the initial charge flows into the maintenance box.

### Initial Charging Flag OFF

This is to reset the initial charge flag. After executing “Initial charging flag ON”, make sure to execute “Initial charging flag OFF” before returning the printer to the customer.

## Head Cleaning

Make sure to execute “Head cleaning” if missing dots occur in the “Nozzle check pattern” or “Test print.”

### Operating procedure

Select and execute “Head cleaning” from “4.Analyze”, or click “Manual Cleaning” in each window of the Adjustment Program.

First of all, execute “CL1” and check the print pattern. If the result has not changed, execute “CL2” and then “CL4.” And, if the printed output does not get better even after that, replace the print head. (See page 149, " Valve Head Assembly / Print Head".)

# Flag Set / Counter Reset

## EEPROM Backup

If the data in EEPROM on the old main board can be readout, it is necessary to transfer the data from the old board to the new board. Follow the procedure below and backup the data in EEPROM.

1. Connect the unit with the computer, and turn the unit on.
2. Start the Adjustment Program, and click [EEPROM Backup] in the “5. Flag Set / Counter Reset”. The Save-As dialog box for the file appears on the screen. Then enter the destination to save and save it.

> **Check** The extension of a backup file is “bin.”

## EEPROM Restore

If the data in EEPROM on the old main board can be readout, it is necessary to transfer the data from the old board to the new board. Follow the procedure below and restore the data in EEPROM.

1. Connect the unit with the computer, and turn the unit on.
2. Start the Adjustment Program, and double-click [EEPROM Backup] in the “5. Flag Set / Counter Reset”.
3. Select the backup file and start restoration.

## Get Counter Information

This allows you to check the following counter values.

| Item | | Description |
|---|---|---|
| Holder I/C Counter | KB | Displays the amount of waste ink that the waste ink pad in the black ink cartridge. |
| | KC | Displays the amount of waste ink that the waste ink pad in the cyan ink cartridge. |
| | KM | Displays the amount of waste ink that the waste ink pad in the magenta ink cartridge. |
| | KY | Displays the amount of waste ink that the waste ink pad in the yellow ink cartridge. |
| Tray ink counters | Counter A | Indicates the quantity of waste ink running from the pump to the ink cartridge.<br>If it exceeds the acceptable amount, the printer goes into the ink end error status. |
| | Counter B | Indicates the absorber below the Pump and AID circuit board unit.<br>If it comes to the end of its life in terms of endurance, the printer goes into the maintenance error status. |
| | Counter Af | Indicates the ink quantity in the head cap. |
| INK change | Counter | Indicates the number of times of replacement of the Ink cartridge. |
| Pressure Pump Counter | CW | Indicates the number of times of clockwise (CW) rotations of the pressure pump motor. |
| | CCW | Indicates the number of times of counterclockwise (CCW) rotations of the pressure pump motor. |
| | Counter | Indicates the number of times of application of the pressure pump motor. |
| Cutter working | Counter | Indicates the total number of times the autocutter was driven. |
| Tube maintenance Counter | Counter | Indicates the total number of times the ink supply tube moves, based on the number of passes of the carriage. When the tube comes to the end of its life in terms of endurance, the printer goes into mechanical error status. |
| One time Counter | Counter Oc | Indicates the number of times of the cyan ink cartridge was inserted regardless of new or used cartridge. |
| | Counter Oy | Indicates the number of times of the yellow ink cartridge was inserted regardless of new or used cartridge. |
| | Counter Om | Indicates the number of times of the magenta ink cartridge was inserted regardless of new or used cartridge. |
| | Counter Ob | Indicates the number of times of the black ink cartridge was inserted regardless of new or used cartridge. |
| AID | Irreparable Nozzle Number | Indicates the number of unrepairable nozzles detected by AID. |
| | Print Pass Number | Indicates the number of noises through print pass detected by AID. |
| | Retry Wiping Counter | Indicates the number of wiping retried by AID. |
| | Irreparable Nozzle Data | Indicates the data of unrepairable nozzles detected by AID. |
| Maintenance counter | Feed counter | Indicates the number of paper feeding steps. |

| Item | | Description |
|---|---|---|
| Accumulate counter | Page | Displays the feeding amount by converting it into the number of pages.<br>(Counts page breaks applied in every page.) |
| | Print pass | Displays the accumulative print passes. |
| Cleaning Counter | Counter | Indicates the total time of the executed cleaning. |
| | Timer Counter | Indicates the number of times of the executed timer cleaning. |

## Reset Cutter movement counter

When replacing the autocutter unit (523), execute “Cutter movement counter reset” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Cutter movement counter reset.”

## Reset Waste ink absorber counter

When replacing the cartridge holder unit (546), execute “Tray ink counter B reset” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Tray ink counter B reset.”

## Reset Tube Maintenance Counter

When replacing the supply duct unit (524), execute “Tube maintenance counter reset” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Tube maintenance counter reset.”

## Reset AID Irreparable Nozzle Number

When replacing the AID circuit board assembly (556), execute “Reset AID Irreparable Nozzle Number” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Reset AID Irreparable Nozzle Number.”

## Reset AID Noise Through Print Pass Number

When replacing the AID circuit board assembly (556), execute “Reset AID Noise Through Print Pass Number” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Reset AID Noise Through Print Pass Number.”

## Reset AID Retry Wiping Counter

When replacing the AID circuit board assembly (556), execute “Reset AID Retry Wiping Counter” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Reset AID Retry Wiping Counter.”

## Reset AID Irreparable Nozzle Data

When replacing the AID circuit board assembly (556), execute “Reset AID Irreparable Nozzle Data” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Reset AID Irreparable Nozzle Data.”

## Reset Pressure Pump Counter CW

When replacing the pressure pump unit (551), execute “Reset Pressure Pump Counter CW” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Reset Pressure Pump Counter CW.”

## Reset Pressure Pump Counter CCW

When replacing the pressure pump unit (551), execute “Reset Pressure Pump Counter CCW” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Reset Pressure Pump Counter CCW.”

## Reset Pressure Pump Counter Counter

When replacing the pressure pump unit (551), execute “Reset Pressure Pump Counter Counter” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Reset Pressure Pump Counter Counter.”

## Reset Waste Ink Holder Counter

When replacing the cartridge holder unit (546), execute “Reset Waste Ink Holder Counter” from the “2. Repair” in the Adjustment Program.

CAUTION

Once a counter is reset, it cannot be set back to the original value, so be careful in executing “Reset Waste Ink Holder Counter.”

## Get Fatal Error Information

This allows you to read the last fatal error information in the EEPROM. Execute “Get Fatal Error Information” from the “1. Diagnostics/Analyze” to check the displayed error code as shown in page 94, " Fatal errors" and treat appropriately.

## *Firmware Update*

Execute “Firmware Update” to rewrite the firmware. Before performing this update, obtain the update file.

Check

Two types of the firmware exist depending on the Main Circuit Board Unit.

- WAD*****
- WAM*****

When overwriting the firmware, obtain the appropriate one from Technical Support.

## *Check Ink Level*

Displays the remaining amount of each ink cartridge (C, M, Y, K) and the maintenance box.

# CHAPTER

# 7

# MAINTENANCE

This chapter provides information on how to maintain the TM-C3500/C3510/C3520 in its optimum operating condition.

# *Cleaning*

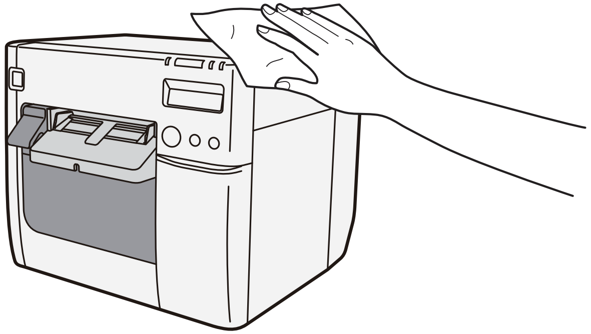
## *Cleaning Exterior Parts*

CAUTION

Never use volatile chemical solvents, such as alcohol, benzine, thinner, trichloroethene, or ketone to clean the exterior parts. These chemicals may deform or deteriorate the plastic and rubber parts.

Use a dry cloth or a wet cloth moistened with water to wipe off any dirt on the case. Make sure to pull the power cord out of the wall socket.

If the dirt does not come off easily, wipe it off with a dry cotton moistened with ethanol (isopropyl alcohol) for disinfection.



## *Print Head Cleaning*

The auto nozzle check function is installed in the printer, and the head is automatically cleaned during normal operation. However, when missing dots occur, the print result may not be clear, or print may be in abnormal colors, depending on some of the settings. This is due to clogging of the print head. In that case, follow the steps below to clean the head using the printer driver.

1. Turn the printer power on.
2. Display the print setting window in the printer driver.
3. Click [Auto Head Cleaning] on the [Maintenance And Utilities] tab.
   The printer nozzle is checked, and head is automatically cleaned when it is clogged. The cleaning repeats 3 times at the maximum.
4. Click [Nozzle Check] and check the printing result.

CAUTION

Cleaning or ink charging is performed while POWER LED is flashing, so do not open the cover while the POWER LED is flashing.

Check

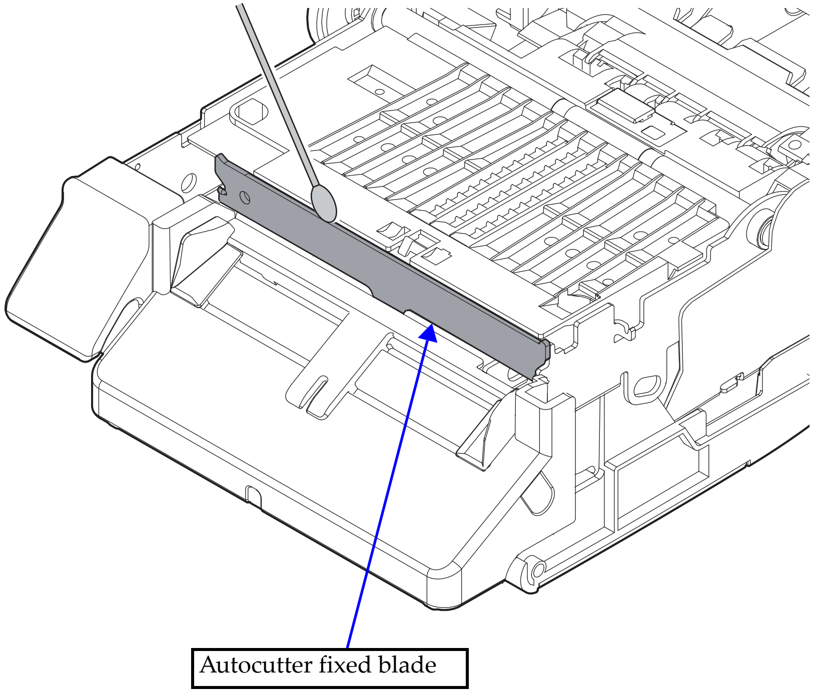
Head cleaning also can be run with the adjustment program.
(See page 247, " Head Cleaning".)

## *Fixed Blade Cleaning*

If adhesive from the label paper adheres to the autocutter, the autocutter may become blunt. If this happens, clean the autocutter blade in the steps below.

**CAUTION** Do not touch the autocutter fixed blade directly with fingers during cleaning, or injury may result.

1. Turn the printer power off, and disconnect the AC cable from the wall outlet.
2. Open the roll paper cover and remove the paper.
3. Remove the adhesive on the autocutter fixed blade of the roll paper cover side with a cotton swab. Slightly moisten the cotton swab with alcohol, if necessary.



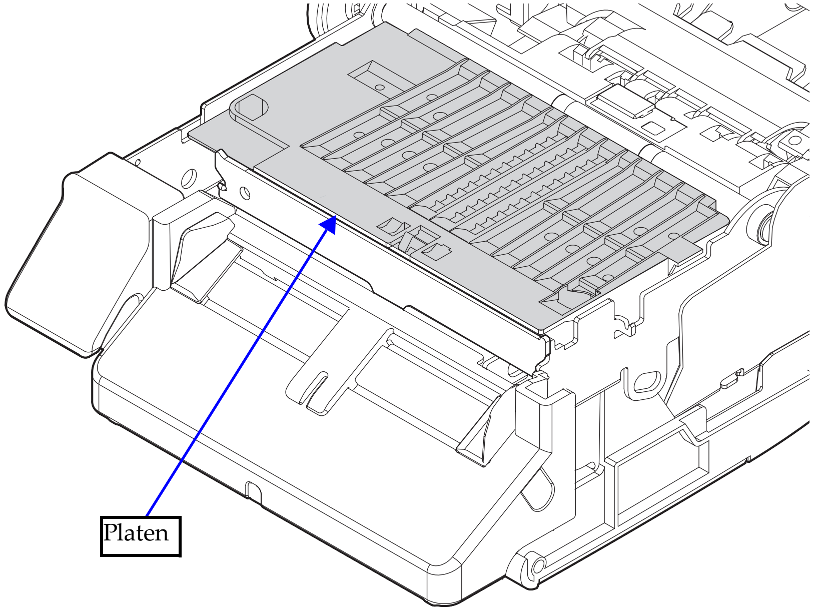
## *Platen Cleaning*

Your hands or clothing may be stained by the ink on the platen. If the platen is dirty, use the non-woven cloth included with the maintenance box for replacing the maintenance box, and clean the platen as follows.

1. Open the roll paper cover, and remove the paper.

**CAUTION** Do not use any water or alcohol, wipe it off dry.

2. Use the included non-woven cloth to wipe off the ink on the platen.
3. When wiping the ink off, be careful not to change the shutter positions on the platen. If the shutter positions are changed, refer to the shutter adjustment label on the top of the printer and readjust them.



# Lubrication

Lubrication is necessary when the TM-C3500/C3510/C3520 is disassembled/assembled. The necessary lubrication is also described in the disassembly/reassembly procedures in Chapter 5, "Disassembly & Assembly" on page 113). Make sure to lubricate the specified points.

## Lubricants

The lubrication compounds approved for the TM-C3500/C3510/C3520 are listed below.

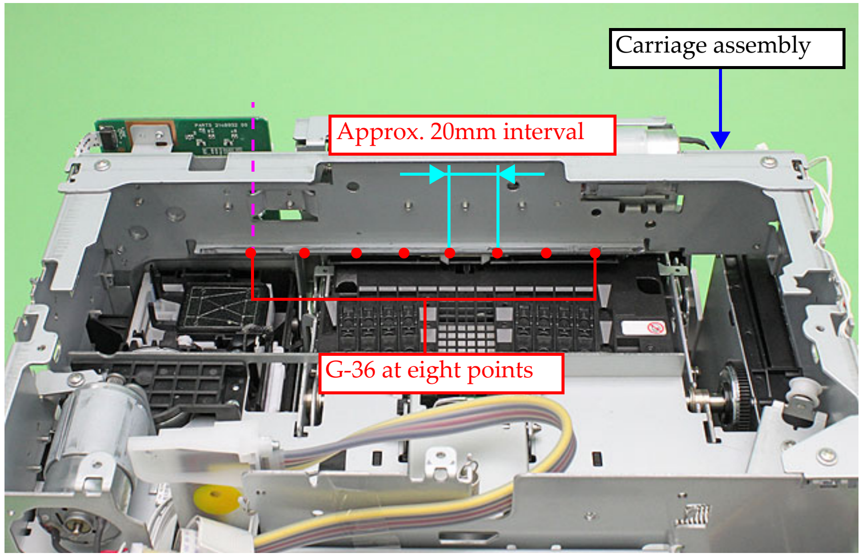
| Type | Name |
|---|---|
| Grease | G-36 |

## List of Lubrication Points

| Lubrication point | Part name that includes the lubrication point | Grease | Reference |
|---|---|---|---|
| Carriage assembly | Carriage assembly | G-36 | Page 257 |
| Main hold roller assembly | Main hold roller assembly (0036) | G-36 | Page 258 |
|  | Carriage frame | G-36 | Page 258 |

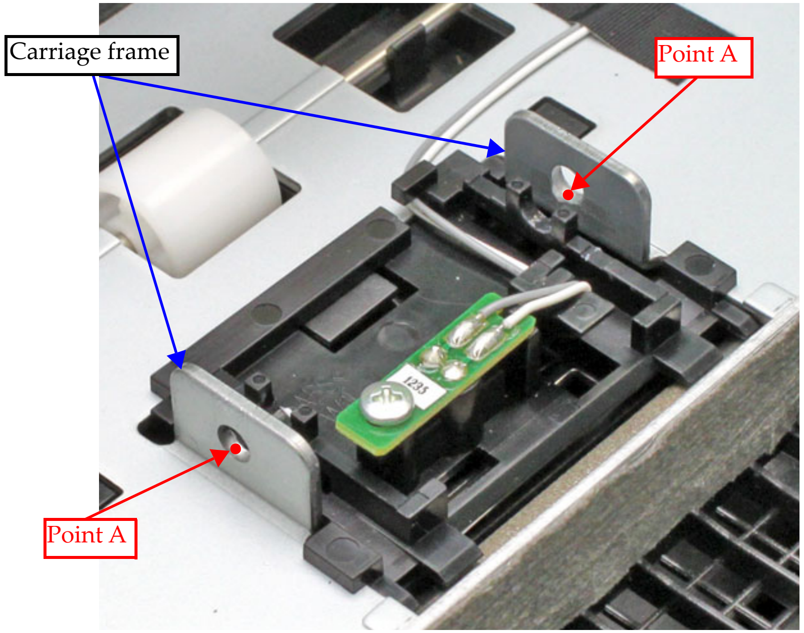
### Carriage Assembly

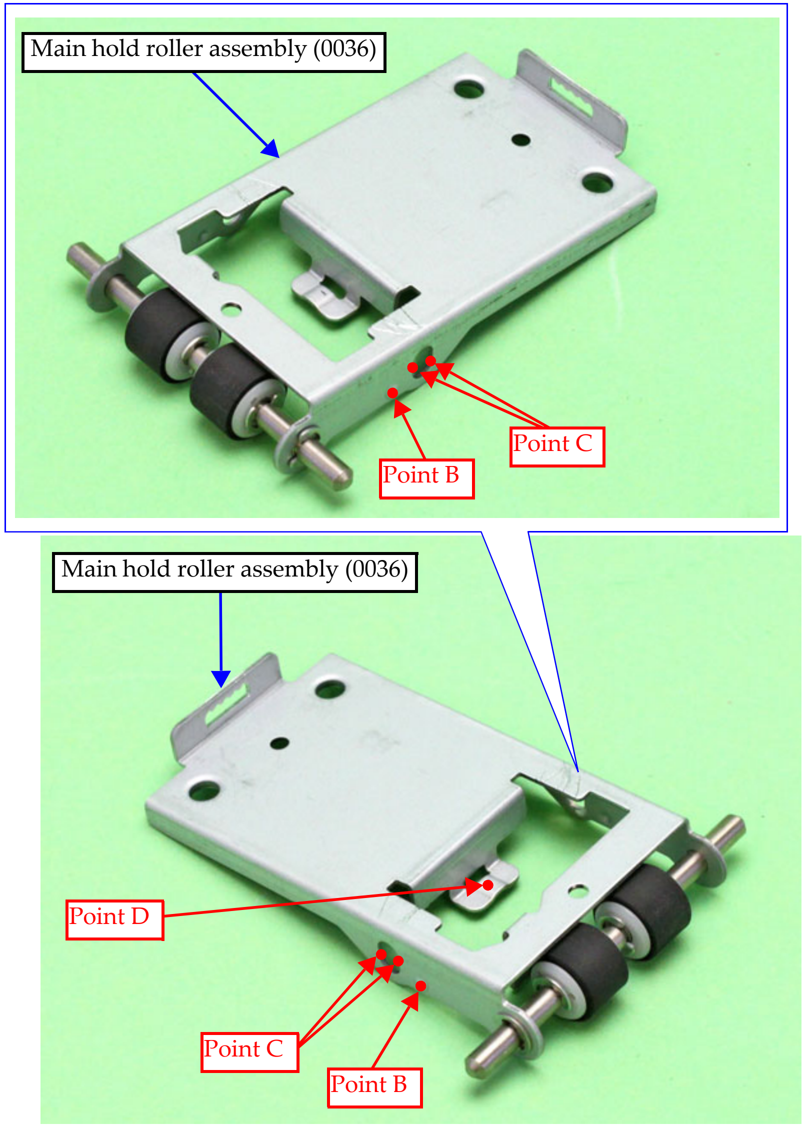
|  |  |
|---|---|
| **Part name** | Carriage assembly |
| **Lubrication point** | Contact point with the carriage |
| **Grease** | G-36 |
| **Amount** | A: 1 mm {0.04"} diameter at eight points using a syringe.<br>Lubricate from the dotted line with an interval of approx. 20 mm. |



## *Main hold roller assembly*

| | |
|---|---|
| **Part name** | ☐ Main hold roller assembly (0036)<br>☐ Carriage frame |
| **Lubrication point** | A: Contact points with the PF hold frame (0035)<br>B: Contact points with the carriage frame<br>C: Contact points with the PF hold frame (0035)<br>D: Contact point with the PF hold frame (0035) |
| **Grease** | G-36 |
| **Amount** | 1 mm {0.04"} diameter at nine points using a syringe. |


Carriage frame
Point A
Point A


Main hold roller assembly (0036)
Point C
Point B
Main hold roller assembly (0036)
Point D
Point C
Point B

## CHAPTER 8

# APPENDIX

# Appendix A Parts List

## Reference Number Order

| Ref. no. | Name in this manual | Name in parts price list | Qty. | Parts supply | Note |
|---|---|---|---|---|---|
| 102 | Wire band | WIRE BAND(X522000011) | 1 | Yes | |
| 103 | Upper case assembly | CASE,UPPER,** ASS'Y,ASP | 1 | Yes | |
| 104 | Rear case assembly | CASE,REAR ASS'Y | 1 | Yes | |
| 105 | Left case | CASE,LEFT,** | 1 | Yes | |
| 106 | Right case | CASE,RIGHT,** | 1 | Yes | |
| 107 | F/F cover | COVER,F/F,** | 1 | Yes | |
| 108 | Roll paper cover sheet | SHEET,ROLL PAPER COVER | 1 | Yes | |
| 109 | Lower case assembly | CASE,LOWER,** ASS'Y | 1 | Yes | |
| 110 | Bottom absorber | ABSORBER,BOTTOM | 1 | Yes | |
| 111 | Front paper guide assembly | PAPER GUIDE,FRONT ASS'Y,** | 1 | Yes | |
| 112 | A/C case assembly | CASE,A/C ASS'Y,** | 1 | Yes | |
| 113 | IC cover assembly | COVER,I/C ASS'Y | 1 | Yes | |
| 115 | Power switch cover | COVER,POWER SWITCH,** | 1 | Yes | |
| 116 | Tray assembly | TRAY ASS'Y,** | 1 | Yes | |
| 117 | USB cable | USB CABLE | 1 | Yes | |
| 118 | AC cable | AC CABLE,*,* | 1 | Yes | Depends on specification |
| 119 | AC adapter | AC ADAPTER,K;* | 1 | Yes | Depends on specification |
| 120 | Panel circuit board assembly | PANEL CIRCUIT BOARD ASS'Y,** | 1 | Yes | |
| 121 | Panel board FFC | FFC,PANEL BOARD,B | 1 | Yes | |
| 128 | Rubber foot A | RUBBER,FOOT | 6 | Yes | |

| Ref. no. | Name in this manual | Name in parts price list | Qty. | Parts supply | Note |
|---|---|---|---|---|---|
| 129 | Roll paper cover sub assembly | COVER,ROLL PAPER SUB ASS'Y,** | 1 | Yes | |
| 130 | Carriage scale | SCALE,CARRIAGE | 1 | Yes | |
| 131 | Scale fixed spring | SPRING,SCALE FIXED | 1 | Yes | |
| 132 | Paper width adjust plate | PLATE,PAPER WIDTH,ADJUST | 1 | Yes | |
| 133 | Paper width lock plate | PLATE,LOCK,PAPER WIDTH | 1 | Yes | |
| 134 | Lower paper guide cover | COVER,PAPER GUIDE,LOWER,** | 1 | Yes | |
| 140 | DIP switch cover | COVER,DIP SWITCH | 1 | Yes | |
| 141 | I/C cover damper | DAMPER,COVER,I/C | 1 | Yes | |
| 142 | M/B cover | COVER,M/B,** | 1 | Yes | |
| 143 | LCD cover | COVER,LCD | 1 | Yes | |
| 144 | I/C cover holder assembly | HOLDER,IC COVER ASS'Y,ASP | 1 | Yes | |
| 145 | Earth wire assembly, F | EARTH WIRE ASS'Y,F | 1 | Yes | |
| 146 | Ferrite core | FERRITE CORE | 4 | Yes | |
| 147 | Roll paper cover guide | GUIDE,ROLL PAPER COVER | 2 | Yes | |
| 148 | FF guide | PAPER GUIDE,F/F,LOWER | 1 | Yes | |
| 201 | Main circuit board unit | MAIN CIRCUIT BOARD UNIT,*** | 1 | Yes | |
| 501 | Valve head assembly | VALVE HEAD ASSY,C3500 | 1 | Yes | |
| 502 | Paper feeding roller bearing | SHAFT HOLDER,PAPER FEED ROLLER | 1 | Yes | |
| 503 | Leaf spring | LEAF SPRING(B101254290) | 1 | Yes | |
| 504 | Mini clamp | MINI CLAMP | 1 | Yes | |
| 505 | Cable clamp | CABLE CLAMP | 3 | Yes | |
| 506 | Roll paper cover open detect sub assembly | ROLL PAPER,COVER OPEN DETECT SUB ASS'Y | 1 | Yes | |
| 507 | Suction fan | FAN,SUCTION | 1 | Yes | |

| Ref. no. | Name in this manual | Name in parts price list | Qty. | Parts supply | Note |
|---|---|---|---|---|---|
| 508 | Rear F/F paper guide sub unit | PAPER GUIDE,F/F,REAR SUB UNIT,B | 1 | Yes | |
| 509 | F/F insert detector sub assembly | F/F INSERT DETECTOR SUB ASS'Y | 1 | Yes | |
| 510 | Paper out roller assembly | ROLLER,PAPER OUT ASS'Y | 1 | Yes | |
| 511 | Platen sub unit | PLATEN SUB UNIT,ASP,PBF | 1 | Yes | |
| 513 | Paper feed shaft assembly | SHAFT,PAPER FEED ASS'Y | 1 | Yes | |
| 514 | Carriage shaft | SHAFT,CARRIAGE | 1 | Yes | |
| 515 | TR circuit board assembly | TR CIRCUIT BOARD ASS'Y,B | 1 | Yes | |
| 516 | Carriage assembly | CARRIAGE ASS'Y | 1 | Yes | |
| 517 | CR motor assembly | MOTOR,ASSY,CR | 1 | Yes | |
| 518 | IS pump unit | IS PUMP UNIT,C3500,** | 1 | Yes | |
| 523 | Auto cutter unit | AUTO CUTTER UNIT,B,PBF | 1 | Yes | |
| 524 | Supply duct unit | DUCT,SUPPLY UNIT,C3500;B | 1 | Yes | |
| 525 | Encoder board assembly | BOARD ASSY.,ENCODER | 1 | Yes | |
| 526 | IC joint tube assembly | TUBE,ASSY,IC,JOINT | 1 | Yes | |
| 528 | Print head | PRINT HEAD | 1 | Yes | |
| 529 | Head FFC A | FFC,HEAD,A | 1 | Yes | |
| 530 | Head FFC B | FFC,HEAD,B | 1 | Yes | |
| 531 | Encoder detector FFC | FFC,ENCODER DETECTOR | 1 | Yes | |
| 534 | Fixed blade | FIXED BLADE | 1 | Yes | |
| 535 | Fixed blade spring | SPRING,FIXED BLADE | 1 | Yes | |
| 536 | CR spacer | SPACER,CR | 3 | Yes | |
| 538 | Acceleration sensor board assembly | ACCELERATION SENSOR BOARD ASS'Y,** | 1 | Yes | |
| 539 | Acceleration board lead wire | LEAD WIRE,ACCELERATION BOARD | 1 | Yes | |

| Ref. no. | Name in this manual | Name in parts price list | Qty. | Parts supply | Note |
|---|---|---|---|---|---|
| 540 | MB holder FFC | FFC,MB HOLDER | 1 | Yes | |
| 541 | Roll paper guide film | FILM,ROLL PAPER GUIDE | 1 | Yes | |
| 546 | Cartridge holder unit | HOLDER,CARTRIDGE UNIT,**,ASP | 1 | Yes | |
| 547 | Joint seal rubber | SEAL RUBBER,JOINT | 2 | Yes | |
| 548 | Waste ink tube | TUBE,INK,EJECT;B | 1 | Yes | |
| 549 | Maintenance box holder absorber | ABSORBER,HOLDER,MAINTENANCE BOX | 1 | Yes | |
| 550 | CSIC connector | CONNECTOR,CSIC;B | 1 | Yes | |
| 551 | Pressure pump unit | PRESSURE PUMP UNIT,C3500 | 1 | Yes | |
| 552 | AID circuit board holder | HOLDER,AID CIRCUIT BOARD | 3 | Yes | |
| 553 | Rubber foot B | RUBBER,FOOT | 1 | Yes | |
| 554 | AID circuit lead wire | LEAD WIRE,AID CIRCUIT | 1 | Yes | |
| 556 | AID circuit board assembly | C35AID CIRCUIT BOARD ASS'Y,** | 1 | Yes | |
| 570 | Panel circuit board plate | PLATE,PANEL CIRCUIT BOARD | 1 | Yes | |
| E01 | E-ring | E-RING,4,F/UC-3C | 2 | Yes | |
| E04 | E-ring | E-RING,3,F/UC-3C | 7 | Yes | |
| E05 | E-ring | E-RING,2.5,F/UC-3C | 1 | Yes | |
| E07 | E-ring | E-RING,5,F/UC-3C | 2 | Yes | |
| N01 | Nut | 6N-B,2,F/ZN-3C | 4 | Yes | |
| S01 | Screw | C.B.S-TITE SCREW,3X6,F/ZN-3C | 22 | Yes | |
| S03 | Earth screw | SCREW,EARTH,3X6 | 34 | Yes | |
| S04 | Screw | C.B.SCREW,3X5,F/ZN-3C | 6 | Yes | |
| S10 | Screw | C.B.S-TITE SCREW,3X6,F/ZN-3C | 14 | Yes | |
| S11 | Screw | C.B.P-TITE SCREW,2.5X8,F/ZN-3C | 9 | Yes | |

| Ref. no. | Name in this manual | Name in parts price list | Qty. | Parts supply | Note |
|---|---|---|---|---|---|
| S12 | Screw | C.B.P-TITE SCREW,3X8,F/ZN-3C | 3 | Yes | |
| S14 | Switch screw | SCREW,SWITCH | 1 | Yes | |
| S15 | Screw | C.B.SCREW,3X40,F/ZN-3C | 2 | Yes | |
| S16 | Screw | C.B.SCREW,3X5,F/ZN-3C | 2 | Yes | |
| S17 | Screw | C.B.P-TITE SCREW,2X6,F/ZN-3C | 2 | Yes | |
| S18 | Earth screw | SCREW,EARTH,3X6 | 28 | Yes | |
| S20 | Screw | C.B.S-TITE SCREW,2.5X5,F/ZN-3C | 2 | Yes | |
| S24 | Screw | C.P.S-TITE(P4)SCREW,3X6,F/ZN-3C | 1 | Yes | |
| S25 | Screw | C.P.(S-P1)SCREW,2X10,F/ZN-3C | 4 | Yes | |
| S26 | Screw | C.P.SCREW,3X8,F/ZN-3C | 2 | Yes | |
| S27 | Screw | C.B.P-TITE SCREW,2X5,F/ZN-3C | 18 | Yes | |
| W01 | Plain washer | P.W.,3X0.5X6,F/ZN-3C | 5 | Yes | |
| W02 | Plain washer | P.W.,4.3X0.8X8,F/ZN-3C | 2 | Yes | |
| 0002 | Roll paper cover assembly | --- | 1 | No | |
| 0004 | Roll paper cover shaft | --- | 1 | No | |
| 0005 | Carriage unit | --- | 1 | No | |
| 0006 | Circuit board cover | --- | 1 | No | |
| 0007 | Top frame | --- | 1 | No | |
| 0008 | Carriage cover | --- | 1 | No | |
| 0010 | Ferrite core | --- | 1 | No | |
| 0011 | Carriage shaft fixed plate | --- | 2 | No | |
| 0012 | Carriage front frame | --- | 1 | No | |
| 0018 | Circuit board frame | --- | 1 | No | |

| Ref. no. | Name in this manual | Name in parts price list | Qty. | Parts supply | Note |
|---|---|---|---|---|---|
| 0024 | Exhaust duct | --- | 1 | No | |
| 0025 | F/F insert detector assembly | --- | 1 | No | |
| 0026 | Paper detector lever | --- | 1 | No | |
| 0027 | Paper detector spring | --- | 1 | No | |
| 0028 | Paper detector holding plate | --- | 1 | No | |
| 0029 | Right strengthen plate | --- | 1 | No | |
| 0030 | Paper out gear | --- | 1 | No | |
| 0033 | FFC guide | --- | 1 | No | |
| 0034 | PF hold spring | --- | 1 | No | |
| 0035 | PF hold frame | --- | 1 | No | |
| 0036 | Main hold roller assembly | --- | 1 | No | |
| 0037 | Lock lever spring | --- | 2 | No | |
| 0038 | Right frame | --- | 1 | No | |
| 0040 | AID cover frame | --- | 1 | No | |
| 0041 | Incline adjust spring | --- | 1 | No | |
| 0042 | Maintenance box unit frame | --- | 1 | No | |
| 0043 | Left frame | --- | 1 | No | |
| 0044 | Maintenance box frame | --- | 1 | No | |
| 0045 | Pressure holder sub assembly | --- | 1 | No | |
| 0046 | AID board frame | --- | 1 | No | |
| 0047 | AID cover | --- | 1 | No | |
| --- | Clamp | TORSION SPRING,32.9,CLAMP | 4 | Yes | |
| --- | Maintenance box unit | MAINTENANCE BOX UNIT,ASP | 1 | Yes | |

| Ref. no. | Name in this manual | Name in parts price list | Qty. | Parts supply | Note |
|---|---|---|---|---|---|
| --- | Laminate sheet | LAMINATE SHEET,1MX1MX0.5T | 1 | Yes | |
| --- | Outer box | OUTER BOX,TMC3500 | 1 | Yes | |
| --- | Pad set | PAD SET,TMC3500 | 1 | Yes | |
| --- | Spacer | SPACER,TMC3500 | 2 | Yes | |

## Screw Types

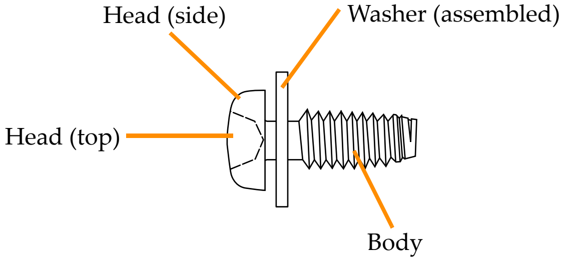
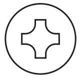
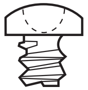
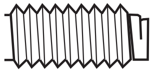
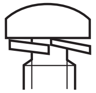
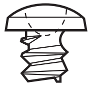
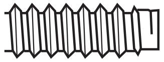
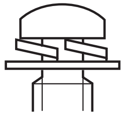
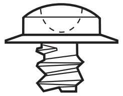
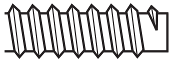
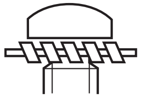
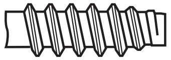
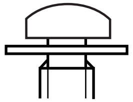
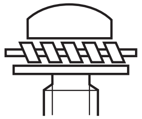

Head (side)
Washer (assembled)
Head (top)
Body

Table 8-1. Types of standard screws

| Head (top) | Head (side) | Body | Washer (assembled) |
|---|---|---|---|
| C (Cross)<br> | P (Pan)<br> | S-tite<br> | (S) (Spring lock washer)<br> |
| | B (Bind)<br> | B-tite<br> | (S-P1)/(S-P2)/(S-P3)/(S-P4) (Spring lock washer + plain washer)<br> |
| | C (Cup)<br> | P-tite<br> | (O) (Outside-toothed lock washer)<br> |
| | | T-B<br> | (P1)/(P2)/(P3)/(P4) (Plain washer)<br> |
| | | | (O-P1) (Outside-toothed washer + plain washer)<br> |

# Appendix B Tools

## Tools for Repair and Adjustment

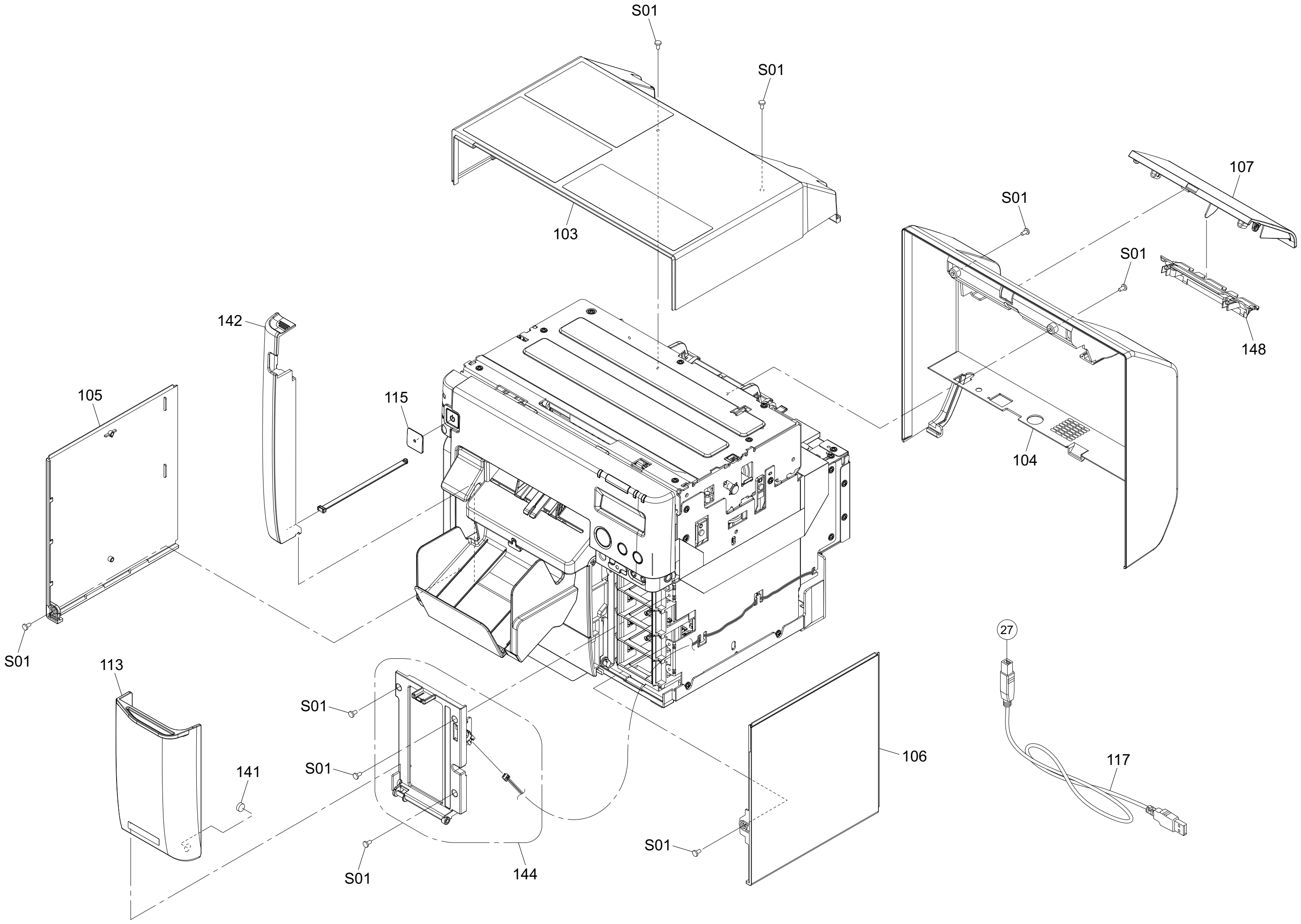
The tools required for repair and adjustment are listed below.

| **Tool** | | **Purpose** | **ASP** | **Note** |
|---|---|---|---|---|
| **Name in this manual** | **Name in parts price list** | | | |
| Thickness gauge (single items) | GAP GAUGE,0.3mm | Adjust the gap between the carriage unit and the platen | Yes | 0.3 mm |
| Thickness gauge (single items) | THICKNESS GAUGE (B776700301) | Adjust the gap between the carriage unit and the platen | Yes | 0.5 mm |
| Grease (G-36) | GREASE G-36 (40GR) (B703600001) | Lubrication | Yes | |
| SCREW LOCK | --- | GAP Voltage/Threshold Adjustment | Yes | |
| TM-C3500 Adjustment Program | --- | Adjustment | No | |
| Label inspection sheet | INSPECTION,LABEL ROLL PAPER,112X102 | To carry out the following or the like<br>☐ PF Adjustment<br>☐ Bi-D Adjustment<br>☐ Roll Paper Margin Adjustment<br>☐ A/C Adjustment and so on | Yes | |
| FF inspection sheet | INSPECTON FF,105 | BM/Fanfold Paper Margin Adjustment and so on | Yes | |
| Inspection sheet | INSPECTION SHEET,105 | GAP Voltage/Threshold Adjustment | Yes | |
| Inspection roll paper | INSPECTION,ROLL PAPER,108X102 | ☐ BACK FEED PICTH Misalignment Adjustment<br>☐ Head Slant Check | Yes | |

# Appendix C Exploded Diagrams and Lubrication Diagrams

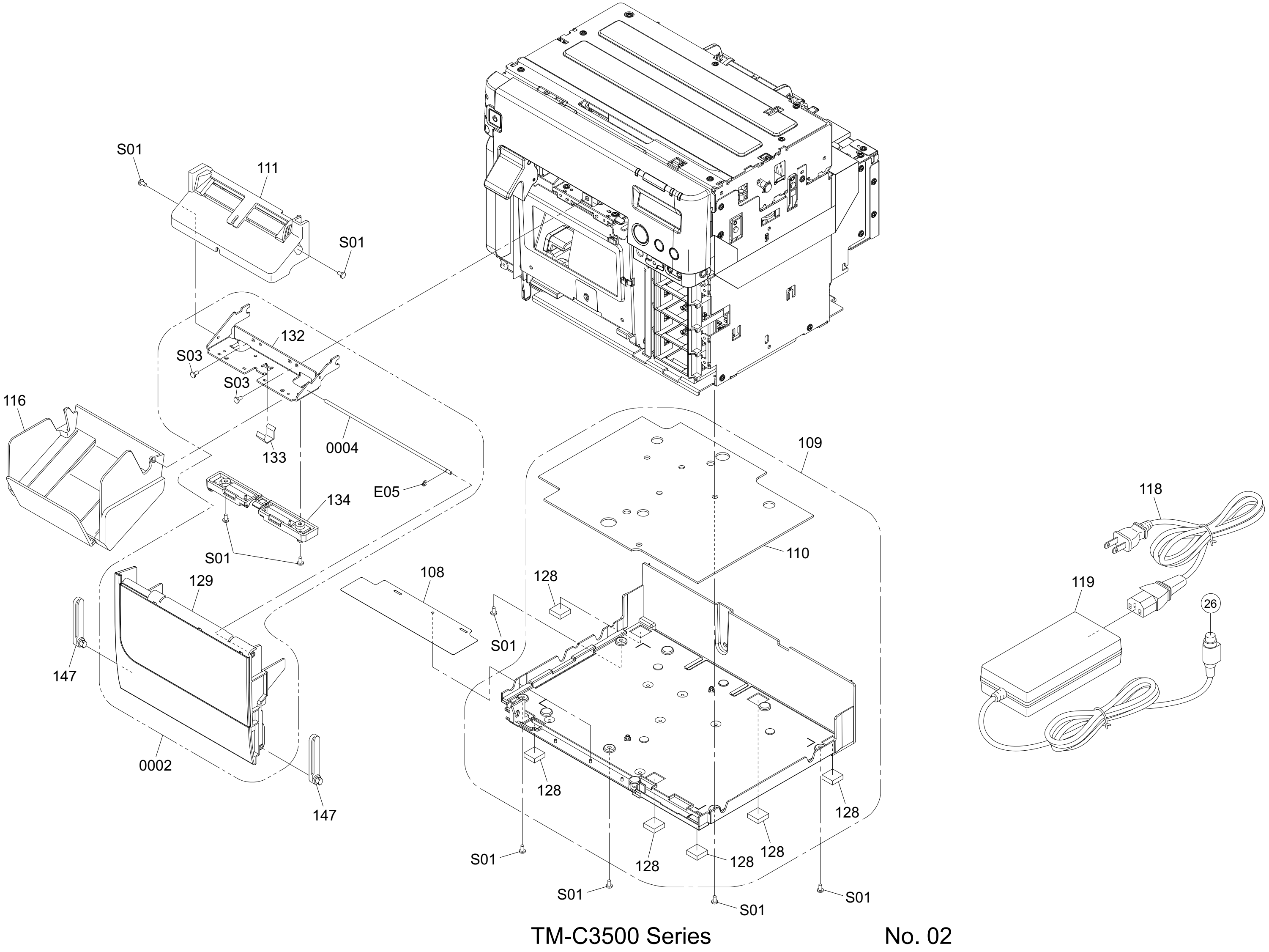
## Exploded Diagrams

No. 1

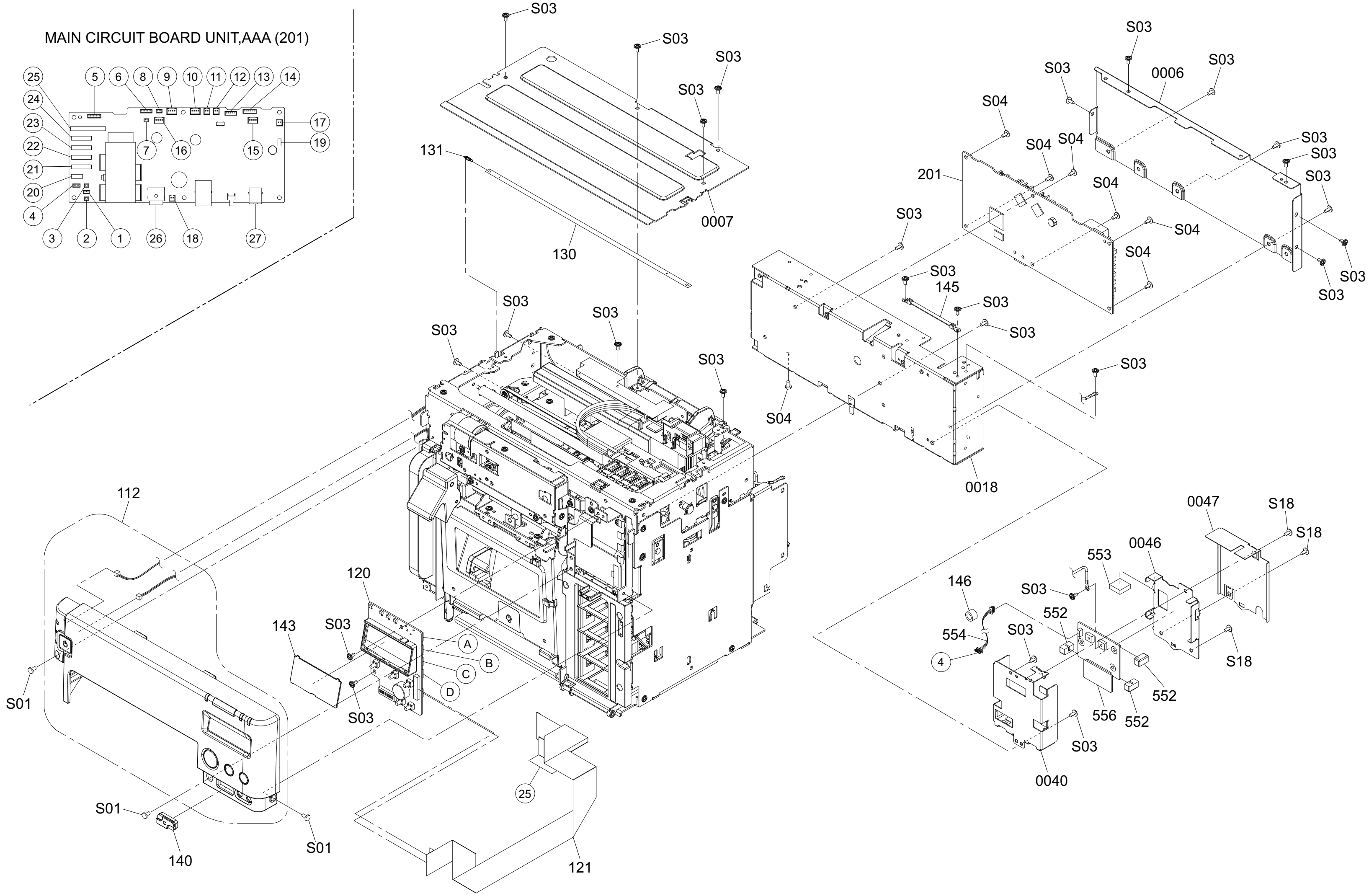

S01
S01
107
S01
103
S01
142
148
105
115
104
S01
113
27
S01
141
S01
106
117
S01
S01
144

TM-C3500 Series No. 01

No. 2


S01
S01
S03
S03
E05
S01
S01
S01
S01
S01
S01
TM-C3500 Series
No. 02

No. 3


MAIN CIRCUIT BOARD UNIT,AAA (201)
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18
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S03
S03
S03
S03
131
0007
130
S03
S03
0006
S04
S04
S04
201
S04
S03
S04
S04
S03
145
S03
S03
S03
S03
S03
S03
S03
S03
S03
S04
0018
112
0047
S18
S18
0046
553
120
146
S03
143
S03
552
554
S03
A
B
C
D
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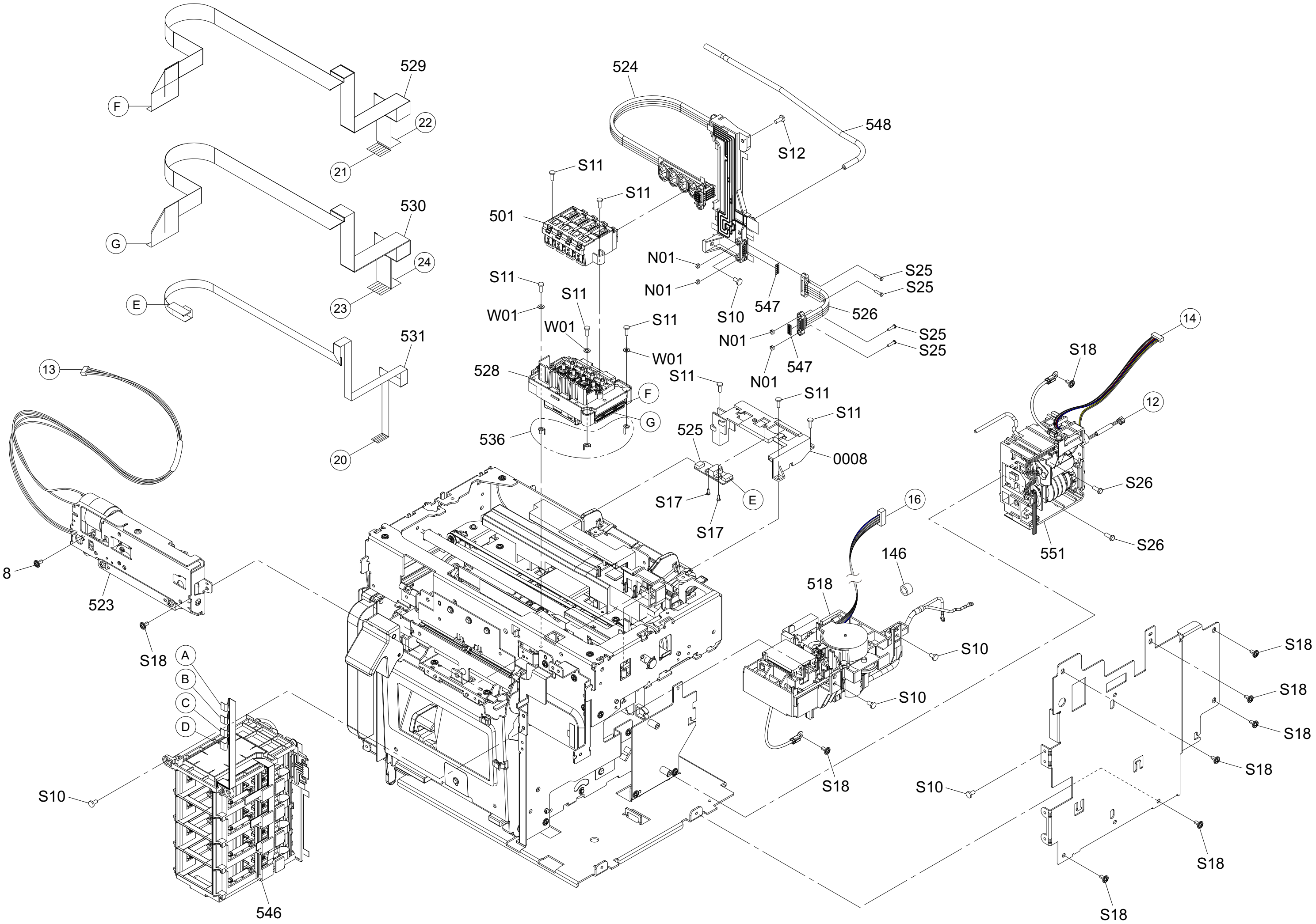
S18
S01
S03
552
556
552
S03
0040
25
S01
S01
140
121

TM-C3500 Series No. 03

No. 4


529
F
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530
G
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23
E
531
20
13
524
548
S12
S11
S11
501
N01
N01
S10
547
S25
S25
526
S25
S25
S11
W01
S11
W01
S11
W01
N01
547
N01
528
F
G
536
S11
S11
S11
525
0008
S17
E
S17
14
S18
12
S26
S26
551
16
146
518
S10
S10
S18
523
S18
A
B
C
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TM-C3500 Series No. 04

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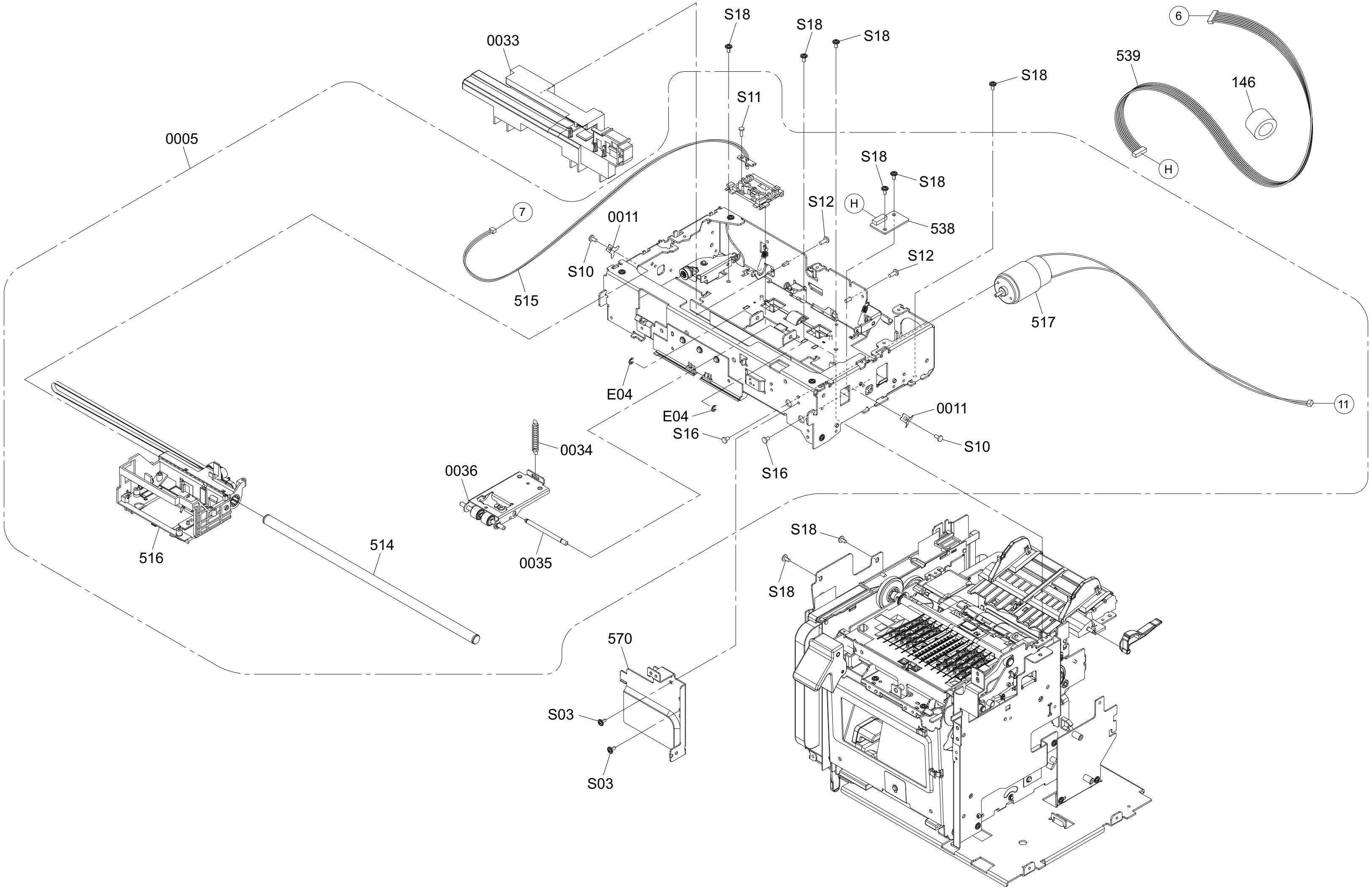
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517
E04
E04
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0011
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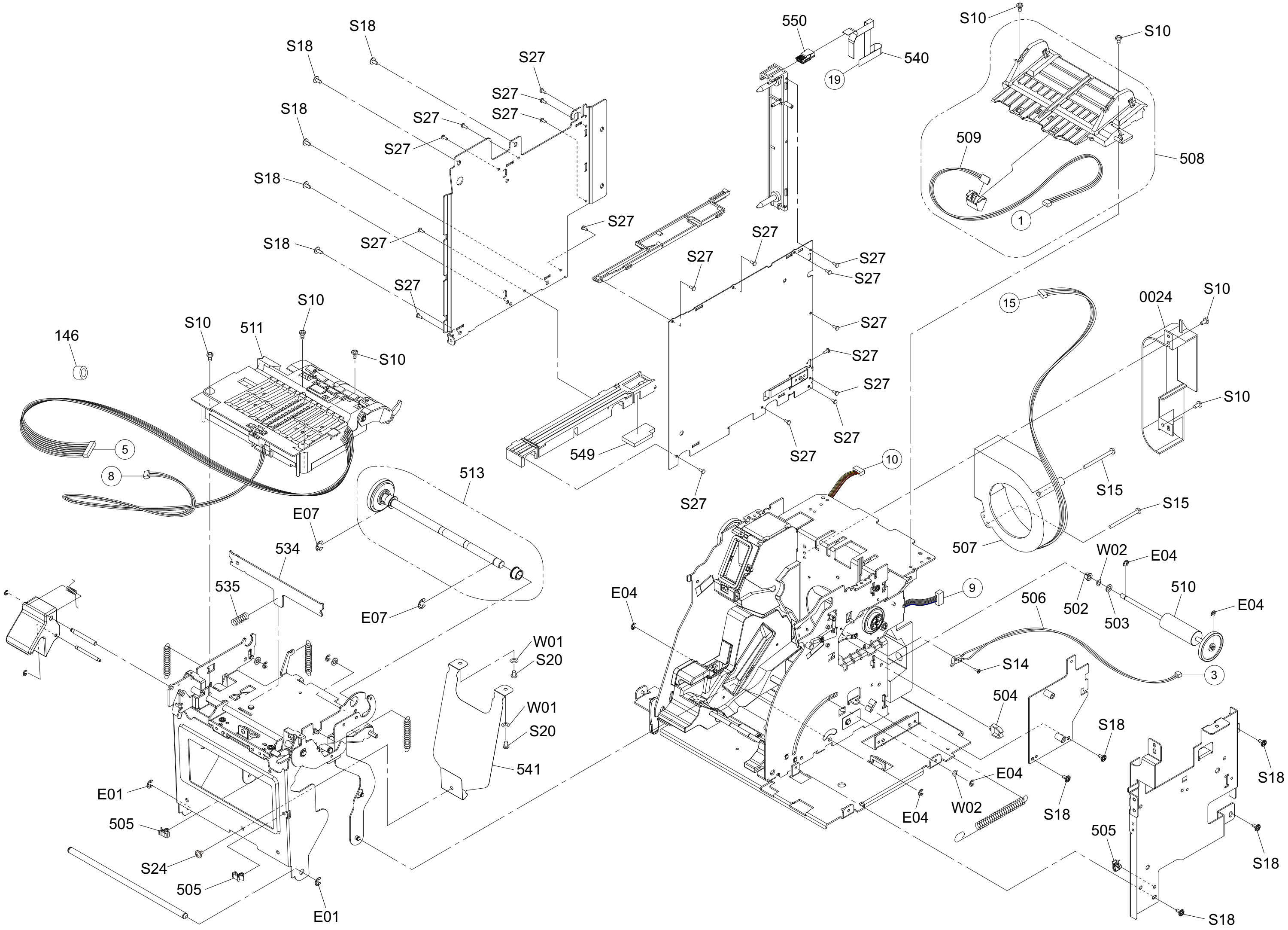
S03

TM-C3500 Series No. 05

No. 6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TM-C3500 Series No. 06

# *Lubrication Diagrams*

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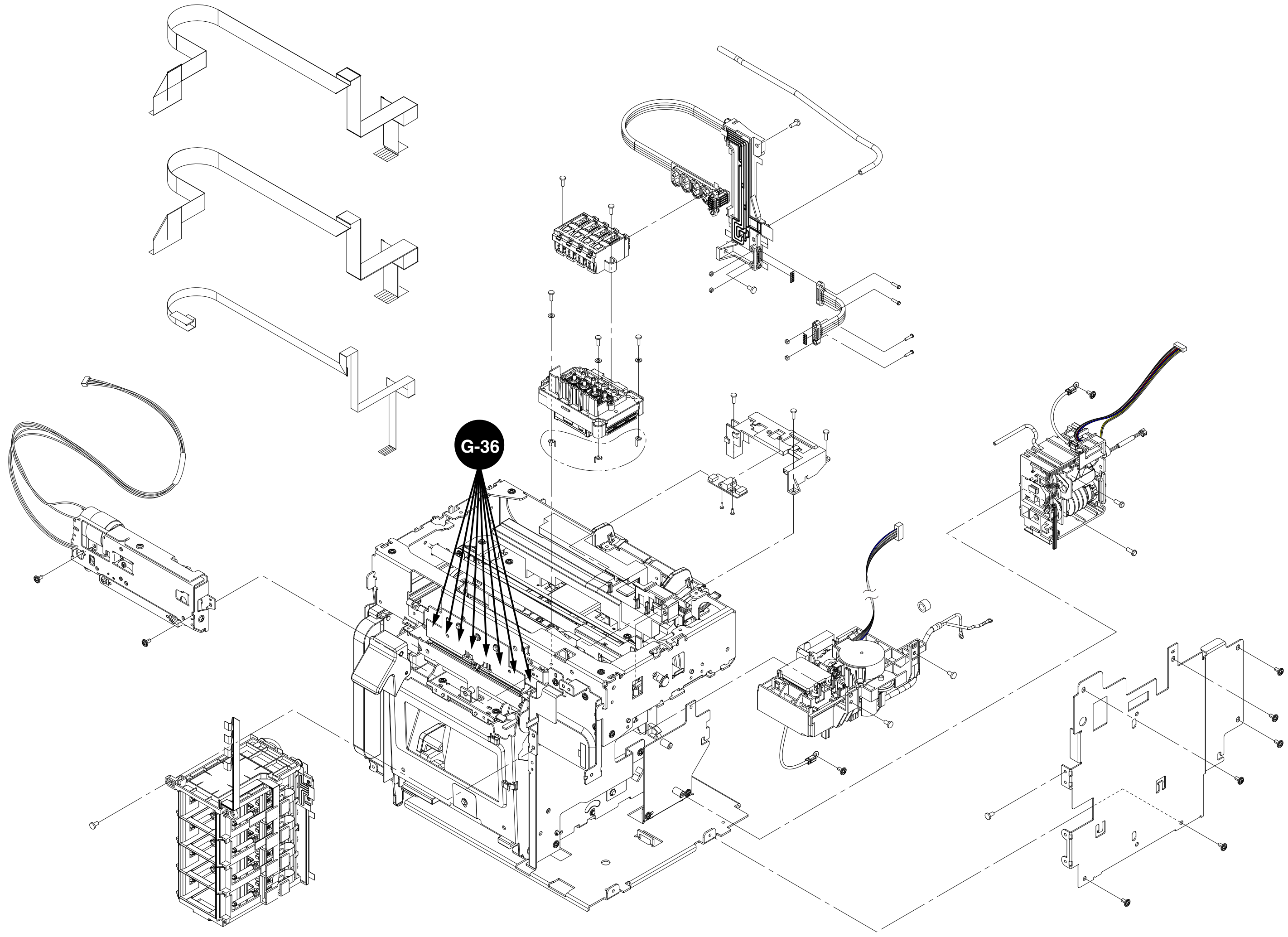

TM-C3500 Series No. 01

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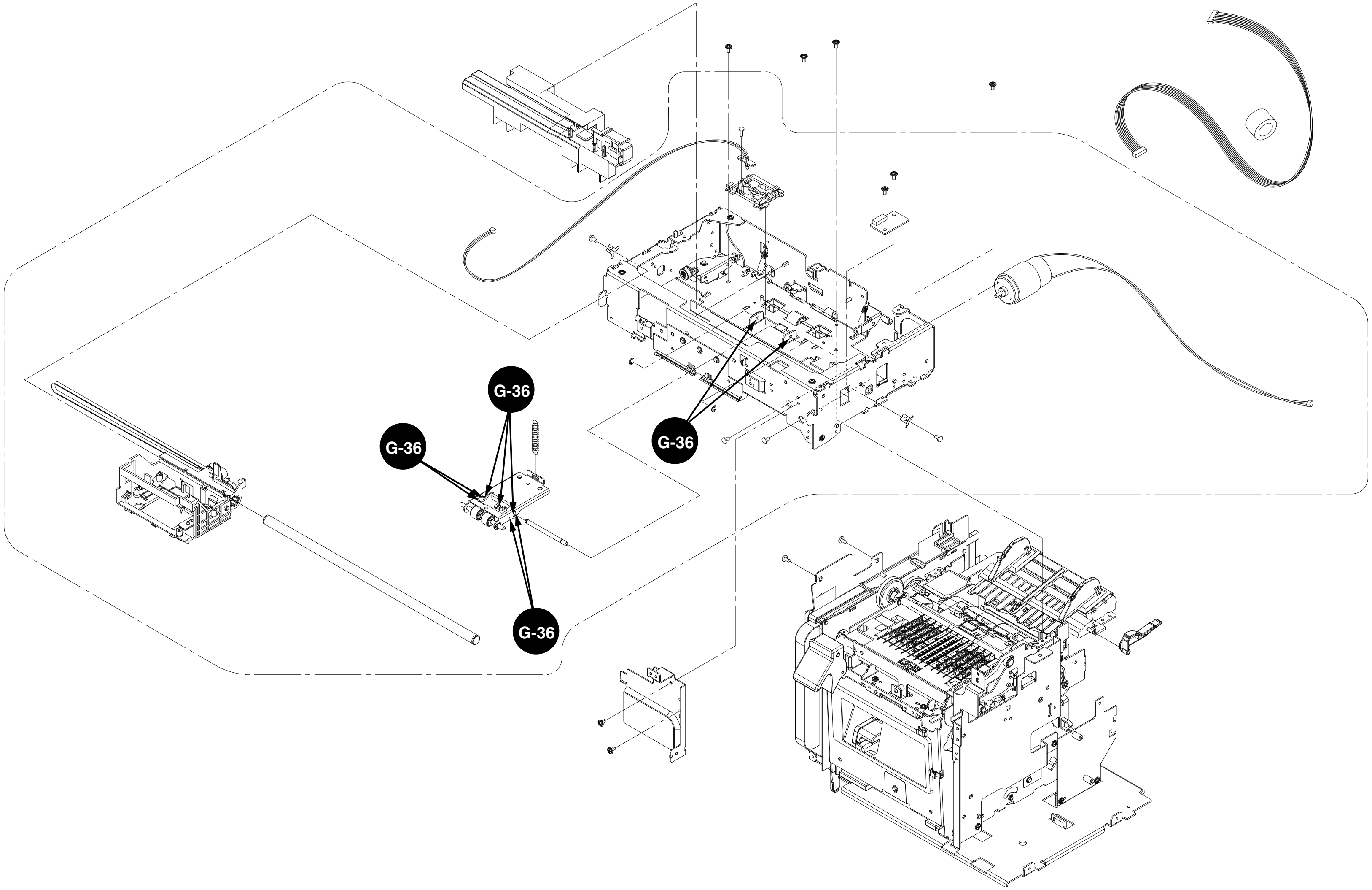
G-36
G-36
G-36
G-36

TM-C3500 Series No. 02